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FIFTY-NINTH ANNUAL REPORT

OF THE

Ohio State Board of Agriculture

WITH AN ABSTRACT OF
THE PROCEEDINGS OF

The County Agricultural Societies

For the Year 1904

TO THE

General Assembly of the State of Ohio

20 ALLIED PRINTING TRADES UNION LABEL COUNCIL SPRINGFIELD

Springfield, Ohio:
The Springfield Publishing Company,
State Printers.
1905.

ANNUAL REPORT

OF THE

Ohio State Board of Agriculture

For the Year 1904.

Department of Agriculture,
Columbus, March 10, 1905.

To the Honorable the General Assembly of Ohio:

Gentlemen:—The Ohio State Board of Agriculture has the honor to submit herewith its fifty-ninth annual report, agreeably to the provisions of sections 3693 and 3694 of the Revised Statutes.

The report contains the transactions of the Board for the year; crop and stock reports issued during the year; the agricultural statistics, as gathered by township assessors; comparative tables of the important farm products; proceedings of the State Farmers' Institute and annual meeting of the Board; report of inspection and analyses of commercial fertilizers; report of the inspection and analyses of samples of commercial feed stuffs; report of the County Farmers' Institutes held in the State and conducted under the direction of the Board; report of Nursery and Orchard Inspection; and the report of the Board of Live Stock Commissioners.

The report shows the work of the Board and the Department of Agriculture during the year 1904, as transacted through its several divisions.

The State Fair held in 1904, agreeably to the provisions of section 3693, Revised Statutes, was the most successful, in all respects, ever held in the State. The educational advantages of these annual State Fairs can scarcely be over-estimated.

The Board appreciates the liberal appropriations made by the Seventy-sixth General Assembly for the construction of sanitary sewers and new exhibition buildings. A generous appropriation by the Seventy-seventh General Assembly will enable the Board to complete the construction of such suitable buildings as should be elected upon the State Fair grounds, and when fully completed, according to plans now contemplated, Ohio will have an equipment for State Fair purposes second to no State in the Union.

The officers and members of the Board, and each and every division of the Ohio Department of Agriculture, are exerting themselves, to the extent of their ability, in performing the many duties required of them by the several acts of the General Assembly of Ohio.

Respectfully,
THE OHIO STATE BOARD OF AGRICULTURE,
By W. W. Miller, *Secretary.*

Ohio State Board of Agriculture
1904

OFFICERS.

JEREMIAH L. CARPENTER, President. WILLIAM MILLER, Vice President.
THOMAS L. CALVERT, Treasurer.
WELLS W. MILLER, Secretary. Columbus.
JAMES W. FLEMING, Ass't. Sec'y. Columbus.

MEMBERS.

	Term Expires.
THADDEUS E. CROMLEY, Ashville, Pickaway County	January, 1905
THOMAS L. CALVERT, Selma, Clark County	January, 1905
WILLIAM MILLER, Gypsum, Ottawa County	January, 1906
JEREMIAH L. CARPENTER, Carpenter, Meigs County	January, 1906
CHARLES H. GANSON, Urbana, Champaign County	January, 1907
ALFERD PUTNAM SANDLES, Ottawa, Putnam County	January, 1907
ROLDON O. HINSDALE, Wadsworth, Medina County	January, 1908
SAMUEL TAYLOR, Grove City, Franklin County	January, 1908
LINDLEY P. BAILEY, Tacoma, Belmont County	January, 1909
EDWIN L. LYBARGER, Spring Mountain, Coshocton County	January, 1909

EXECUTIVE COMMITTEE.

JEREMIAH L. CARPENTER, President. ALFERD PUTNAM SANDLES.
THOS. L. CALVERT. SAM'L TAYLOR. THADDEUS E. CROMLEY

FARMERS' INSTITUTE COMMITTEE.

THADDEUS E. CROMLEY, Chairman. WILLIAM MILLER.
ROLDON O. HINSDALE.

AUDITING COMMITTEE.

CHARLES H. GANSON, Chairman. LINDLEY P. BAILEY.
EDWIN L. LYBARGER.

89450

Ohio State Board of Agriculture
1905

OFFICERS.

WILLIAM MILLER, President. ROLDON O. HINSDALE, Vice-President.
THOMAS L. CALVERT, Treasurer.
WELLS W. MILLER, Secretary.
Columbus.

MEMBERS.

	Term Expires.
WILLIAM MILLER, Gypsum, Ottawa County	January, 1906
JEREMIAH L. CARPENTER, Carpenter, Meigs County	January, 1906
CHARLES H. GANSON, Urbana, Champaign County	January, 1907
ALFERD PUTNAM SANDLES, Ottawa, Putnam County	January, 1907
ROLDON O. HINSDALE, Wadsworth, Medina County	January, 1908
SAMUEL TAYLOR, Grove City, Franklin County	January, 1908
LINDLEY P. BAILEY, Tacoma, Belmont County	January, 1909
EDWIN L. LYBARGER, Spring Mountain, Coshocton County	January, 1909
THADDEUS E. CROMLEY, Ashville, Pickaway County	January, 1910
THOMAS L. CALVERT, Selma, Clark County	January, 1910

EXECUTIVE COMMITTEE.

WILLIAM MILLER, President. ALFERD PUTNAM SANDLES.
THADDEUS E. CROMLEY. JEREMIAH L. CARPENTER. SAM'L TAYLOR.

FARMERS' INSTITUTE COMMITTEE.

THADDEUS E. CROMLEY, Chairman. THOMAS L. CALVERT
ROLDON O. HINSDALE.

AUDITING COMMITTEE.

CHARLES H. GANSON, Chairman. LINDLEY P. BAILEY.
EDWIN L. LYBARGER.

LIST OF MEMBERS OF THE OHIO STATE BOARD OF AGRICULTURE FROM THE ORGANIZATION OF THE BOARD TO DATE.

(NOTE.—The act creating the State Board of Agriculture, passed in 1846, provided for fifty-three members and named them. The act was amended in 1847, reducing the number of members to ten. Five members were elected each year for a term of two years until 1898, when the act was so amended as to provide for the election of two members each year for a term of five years.)

Names.	Year of Service.	Residence.
John B. Bayless	1846	Jefferson County.
Henry C. Brish	1846	Seneca County.
Frederick Bonner	1846	Greene County.
Joseph Burns	1846	Coshocton County.
John Chaney	1846	Fairfield County.
G. W. Cowden	1846	Trumbull County.
Absalom Dun	1846	Butler County.
John Eckels	1846	Hancock County.
Elias Florence	1846	Pickaway County.
John Fuller	1846	Erie County.
Geo. W. Gibbons	1846	Muskingum County.
William Gill	1846	Pickaway County.
H. N. Gillett	1846	Lawrence County.
L. C. Goble	1846	Putnam County.
David Gregory	1846	Delaware County.
Anson Howard	1846	Champaign County.
John Johnson	1846	Miami County.
Aaron Johnson	1846	Perry County.
Greenbury Keen	1846	Portage County.
Billius Kirtland	1846	Mahoning County.
Newton Larsh	1846	Preble County.
Liba Lindley	1846	Athens County.
Jas. Loudon	1846	Brown County.
John McElderry	1846	Tuscarawas County.
Wm. McFadden	1846	Harrison County.
Beatty McFarland	1846	Jefferson County.
John Martin	1846	Columbiana County.
Isaac Moore	1846	Lake County.
Gilman C. Mudgett	1846	Paulding County.
Samuel Myers	1846	Crawford County.
Isaac Neiswanger	1846	Belmont County.
Simon Perkins	1846	Summit County.
Henry Protzman	1846	Montgomery County.
W. R. Putman, Jr.	1846	Washington County.
Felix Renick	1846	Ross County.
Jas. L. Reynolds	1846	Stark County.
Benj. Ruggles	1846	Belmont County.
Sam'l Spangler	1846	Fairfield County.
David Stevens	1846	Richland County.
Abraham Studdebaker	1846	Darke County.
Dowty Utter	1846	Clermont County.
John I. Vanmeter	1846	Pike County.
Richard Warner	1846	Medina County.
Jesse Wilson	1846	Shelby County.
J. M. Millikin	1846	Hamilton.
J. T. Pugsley	1846	Convenience.
Allen Trimble	1846–51	Hillsboro.
M. L. Sullivant	1846–53	Columbus.
Sam'l Medary	1846–53	Columbus.
Darius Lapham	1846–50	Cincinnati.
Arthur Watts	1846–52	Chillicothe.
J. P. Kirtland	1846–48	Cleveland.
A. E. Strickle	1846–49	Wilmington.

Members of the State Board of Agriculture.—Continued.

Names.	Inclusive. Service, Years of	Postoffice.
M. B. Bateham	1847–51	Columbus.
John Codding	1847–49	Granger.
C. Springer	1848–52	Meadow Farm.
J. M. Edwards	1848–52	Canfield.
J. G. Gest	1848–54	Spring Valley.
F. R. Elliott	1849–51	Cleveland.
J. T. Pugsley	1850–51	Convenience.
S. Halloway	1850–51	St. Clairsville.
William Case	1852–53	Cleveland.
Philo Adams	1852–53	Huron.
R. W. Musgrave	1852–57	Sulphur Springs.
R. W. Steele	1853–56	Dayton.
William H. Ladd	1853–56	Richmond.
D. McIntosh	1853–54	Shalersville.
J. T. Worthington	1853–56	Chillicothe.
Joseph Sullivant	1854–55	Columbus.
John K. Greene	1854–57	Cincinnati.
James L. Cox	1854–55	Zanesville.
B. Stedman	1854–57	Cleveland.
Alexander Waddle	1855–60	South Charleston.
Abel Krum	1855–58	Cherry Valley.
Lucien Buttles	1856–59	Columbus.
G. W. Baker	1856–57	Marietta.
John M. Milliken	1857–62	Hamilton.
Luther Smith	1857–58	West Liberty.
Thomas S. Webb	1857–58	Massillon.
Norton S. Townshend	1858–63	Avon.
L. Q. Rawson	1858–59	Fremont.
James M. Trimble	1858–61	Hillsboro.
John Reber	1858–61	Lancaster.
D. E. Gardner	1859–64	Toledo.
William Dewitt	1859–64	Cleveland.
C. W. Potwin	1859–62	Zanesville.
T. C. Jones	1860–67	Delaware.
Henry B. Perkins	1860–63	Warren.
David Taylor	1861–66	Columbus.
Jacob Egbert	1862–63	Lebanon.
Nelson J. Turney	1862–69	Circleville.
D. McMillan	1863–70	Xenia.
W. R. Putnam	1863–64	Marietta.
William F. Greer	1864–67	Painesville.
James Fullington	1864–69	Irwin Station.
William B. McClung	1864–71	Troy.
James W. Ross	1865–70	Perrysburg.
R. R. Donnelly	1865–68	Wooster.
James Buckingham	1865–72	Zanesville.
J. Park Alexander	1867–70	Akron.
Norton S. Townshend	1868–69	Avon.
William Lang	1868–71	Tiffin.
D. C. Richmond	1869–74	Sandusky.
R. P. Cannon	1870–75	Aurora.
James B. Jamison	1870–77	Cadiz.
L. G. Delano	1870–75	Chillicothe.
L. B. Sprague	1871–76	Springfield.
Simpson Harmount	1871–76	New Philadelphia.
John A. Warder	1871–76	Cleves.
W. S. Hickox	1872–73	Mansfield.
B. W. Carlisle	1872–79	Hooker's Station.
Justus C. Stephens	1873–74	Kenton.
John M. Pugh	1874–79	Columbus.
L. B. Wing	1875–80	Newark.
Russell C. Thompson	1875–76	Sylvania.

MEMBERS OF THE STATE BOARD OF AGRICULTURE.—Concluded.

Names.	Inclusive. Service, Years of	Postoffice.
Leo Weltz	1876–83	Wilmington.
D. L. Pope	1876–81	Welshfield.
Charles Smith	1877–80	Marion.
E. T. Stickney	1877–78	Republic.
A. E. Stone	1877–78	Gallipolis.
Peter Murphy	1877–80	Hughes' Station.
W. N. Cowden	1878–83	Quaker City.
R. Baker	1879–82	Elyria.
Arvine C. Wales	1879–82	Massillon.
R. H. Hayman	1880–81	Portsmouth.
O. P. Chaney	1880–82	Canal Winchester.
C. D. Bailey	1881–88	Gallipolis.
J. C. Levering	1881–86	Levering.
William S. Foster	1881–88	Urbana.
L. B. Harris	1882–87	Upper Sandusky.
J. H. Brigham	1882–89	Delta.
L. H. Bonham	1883–86	Oxford.
H. Talcott	1883–87	Jefferson.
N. A. Sims	1883–85	Columbus.
T. P. Shields	1884–87	Watkins.
John Pow	1884–89	Salem.
S. H. Hurst	1884–89	Chillicothe.
J. J. Sullivan	1887–88	Millersburg.
Joseph H. Terrell	1887–88	New Vienna.
J. G. Russell	1887–90	Mt. Gilead.
H. G. Tryon	1888–91	Willoughby.
J. M. Black	1888–91	Hanover. (Fairmount, W. Va.)
A. H. Kling	1889–96	Marion.
H. S. Grimes	1889–90	Portsmouth.
A. J. Clark	1889–98	Cambridge.
W. W. Miller	1889–94	Castalia.
J. W. Pollock	1890–93	Cedarville.
N. Ohmer	1890–95	Dayton.
L. G. Ely	1890–91	West Unity.
E. L. Hinman	1890–93	Columbus.
J. C. Bower	1891–98	Athens. (Groveport.)
George Lewis	1891–94	Van Wert.
Chester Bordwell	1892–93	Batavia.
F. A. Derthick	1892–95	Mantua.
J. T. Robinson	1894–97	Rockaway.
G. Liggett	1894–1901	Watkins.
J. N. Pringle	1894–95	Cardington.
E. C. Ellis	1895–98	Crestvue.
Chester Bordwell	1895–1901	Batavia.
L. G. Ely	1896–1900	Fayette. (West Unity.)
H. S. Grimes	1896–1900	Portsmouth.
Albert Hale	1896–99	Mogadore.
J. S. Stuckey	1897–1903	Van Wert.
S. H. Ellis	1898–99	Waynesville.
D. J. Green	1899–1902	Renrock.
B. P. Baldwin	1899–1903	Tiger.
Samuel Taylor	1899	Grove City.
T. E. Cromley	1900	Ashville.
T. L. Calvert	1900	Selma.
Wm. Miller	1901	Gypsum.
J. L. Carpenter	1901	Carpenter.
C. H. Ganson	1902	Urbana.
A. P. Sandles	1902	Ottawa.
R. O. Hinsdale	1903	Wadsworth.
E. L. Lybarger	1904	Spring Mountain.
L. P. Bailey	1904	Tacoma.

LIST OF OFFICERS OF THE OHIO STATE BOARD OF AGRICULTURE, FROM ITS ORGANIZATION TO DATE; ALSO TABLES SHOWING PLACE OF HOLDING AND RECEIPTS OF EACH FAIR.

Yr.	President.	Treasurer.	Secretary.	Place of Fair.	Receipts.
1846	Allen Trimble	M. L. Sullivant	Samuel Medary	Cincinnati	$8,036 18
1847	Same	Same	M. B. Bateham	Columbus	8,204 09
1848	Same	Same	Same	....	....
1849	M. L. Sullivant	Samuel Medary	Same	....	....
1850	Same	Same	Same	....	....
1851	Same	Same	W. W. Mather	....	....
1852	Arthur Watts	Same	Same	Cleveland	13,360 00
1853	Samuel Medary	M. L. Sullivant	Geo. Sprague	Dayton	13,996 37
1854	R. W. Musgrave	Joseph Sullivant	Same	Newark	8,824 58
1855	J. T. Worthington	Same	Same	Columbus	9,745 54
1856	William H. Ladd	Lucien Buttles	Same	Cleveland	16,684 20
1857	Alexander Waddle	Same	J. H. Klippart	Cincinnati	17,530 75
1858	John M. Millikin	Same	Same	Sandusky	9,997 70
1859	N. S. Townshend	Same	Same	Zanesville	8,958 82
1860	Alexander Waddle	Chas. W. Potwin	Same	Dayton	11,998 50
1861	Darwin E. Gardner	Same	Same	Dayton	8,036 18
1862	Thomas C. Jones	David Taylor	Same	Cleveland	11,260 64
1863	N. S. Townshend	Same	Same	Cleveland	11,142 00
1864	Nelson J. Turney	Same	Same	Columbus	12,620 54
1865	Same	Same	Same	Columbus	10,658 65
1866	Wm. B. McClung	Same	Same	Dayton	14,035 80
1867	Daniel McMillen	Jas. Buckingham	Same	Dayton	18,692 98
1868	James Fullington	Same	Same	Toledo	15,606 25
1869	Same	Same	Same	Toledo	19,606 50
1870	James W. Ross	J. Park Alexander	Same	Springfield	18,252 85
1871	William Lang	Jas. Buckingham	Same	Springfield	16,460 25
1872	James Buckingham.	Simpson Harmount	Same	Mansfield	19,149 45
1873	Lincoln G. Delano	Same	Same	Mansfield	22,517 50
1874	Same	Same	Same	Columbus	27,674 79
1875	R. P. Cannon	Same	Same	Columbus	20,539 30
1876	S. Harmount	J. M. Pugh	Same	Columbus	11,909 61
1877	J. B. Jamison	Same	Same	Columbus	21,151 21
1878	J. M. Pugh	L. B. Wing	Same	Columbus	11,979 50
1879	B. W. Carlisle	Same	J. W. Fleming	Columbus	30,703 35
1880	L. B. Wing	D. L. Pope	W. I. Chamberl'n	Columbus	23,682 20
1881	D. L. Pope	Leo. Weltz	Same	Columbus	29,706 16
1882	R. Baker	W. N. Cowden	Same	Columbus	34,082 52
1883	W. N. Cowden	L. B. Harris	Same	Columbus	38,513 78
1884	W. S. Foster	Same	Same	Columbus	33,306 48
1885	C. D. Bailey	J. C. Levering	Same	Columbus	29,796 51
1886	L. N. Bonham	L. B. Harris	Same	Columbus	30,533 17
1887	J. H. Brigham	Same	L. N. Bonham	Columbus	30,902 10
1888	John Pow	J. G. Russell	Same	Centennial year, no fair	....
1889	Same	Same	Same	Columbus	19,637 41
1890	J. G. Russell	A. H. Kling	Same	Columbus	27,574 55
1891	J. M. Black	Same	Same	Columbus	33,878 64
1892	A. H. Kling	W. W. Miller	Same	Columbus	30,357 19
1893	J. W. Pollock	Same	Same	Columbus	19,350 93
1894	W. W. Miller	F. A. Derthick	Same	Columbus	27,260 25
1895	A. J. Clark	Same	W. W. Miller	Columbus	33,966 13
1896	J. C. Bower	A. J. Clark	Same	Columbus	22,531 20
1897	J. T. Robinson	J. C. Bower	Same	Columbus	30,369 48
1898	C. Bordwell	Same	Same	Columbus	31,023 36
1899	L. G. Ely	H. S. Grimes	Same	Columbus	33,749 17
1900	H. S. Grimes	L. G. Ely	Same	Columbus	31,521 35
1901	J. S. Stuckey	G. Liggett	Same	Columbus	51,576 50
1902	Samuel Taylor	T. L Calvert	Same	Columbus	40,519 72
1903	T. E. Cromley	Same	Same	Columbus	49,292 75
1904	J. L Carpenter	Same	Same	Columbus	37,632 97

INDEX.

A

PAGE.
Agricultural Education, Dr. W. O. Thompson 485
Agriculture, Ohio State Board of, Sixtieth Annual Meeting 469
  Auditing Committee, Report of 483
  Bachelder, Governor N. J., Remarks of 475
      Address—Rural Development 494
  Carpenter, J. L., Annual Address of 471
  Craig, Prof. John, Certain Phases of Orchard Management 501
  Delegates, List of 470
  Election of Members 513
  Financial Statement 481
  Herrick, Governor Myron T., Remarks of 475
  Invocation, Dr. W. I. Chamberlain 469
  Nomination of Candidates 483
  Resolutions, Report of Committee on 513
  Thompson, Dr. W. O., Agricultural Education 485
Agricultural Societies, Reports of County 147–173
Agriculture, State Board, Officers and Members, 1904-1905 .... iii–iv
Agriculture, State Board, Executive oCmmittee, 1904-1905 .... iii–iv
Agriculture, State Board, Farmers' Institute Committee, 1904-1905 .... iii–iv
Agriculture, State Board, Auditing Committee, 1904-1905 .... iii–iv
Agriculture, State Board, List of Members from 1846 to 1905 .... v–viii
Agriculture, State Board, Table showing receipts of each Fair and place of holding ix
Agriculture, Transactions of Ohio State Board of 1–22
Agricultural Statistics 23–145
Alfalfa a Boon to the Farmers, Will H. Palmer 544
Allen, Mrs. H. E., Economy of Strength 638
Animals, Infectious Diseases of, and the Live Stock Industry of the State, Dr. Paul Fischer 394
Annual Report, Introduction to, by W. W. Miller, Secretary, and J. W. Fleming, Assistant Secretary ii
Annual Production of Corn and Wheat since 1850 62–63
Average Production and Price of Corn and Wheat by Decades, 1850-1900 64

B

Bachelder, Governor N. J., Remarks of 475
      Address—Rural Development 494
Baker, Miss Maude, Schools and Teachers 629
Barrett, Eunice L., Better Use of Time for Farm Women 650
Beacham, Mrs. Linnie, Butter Making on the Farm 582
Benefits from Farmers' Institutes, D. S. Snider 636
Berkholder, M. C., Co-Operation 634
Brigham, Colonel J. H., Resolution Relative to Death of 418
Brown, G. H., The Relation of Landlord and Tenant 600
Brown, Dr. H. M., Cattle 555
Burgess, A. F., Spraying for Control of Orchard Pests 336
Butter Making and the Cream Separator, W. L. Parrett 579

C

PAGE.

Care of the Winter Dairy, The, W. A. Rice 576
Carpenter, J. L., Address of 471
Cattle, Dr. H. M. Brown 555
Chamberlain, Dr. W. I., Invocation 469
Commercial Feed Stuffs, Laws to Regulate Manufacture and Sale 331–332
Commercial Feed Stuffs, Official Report 319–330
Commercial Feed Stuffs Properly Licensed, List of 330
Commercial Fertilizers, Laws to Regulate Manufacture and Sale 316–317
Commercial Fertilizers, Official Report 250–315
Commercial Fertilizers, Properly Licensed, List of 312–315
Committee, Auditing .... iii–iv
Committee, Executive .... iii–iv
Committee on Resolutions of State Farmers' Institute, Report of 418–419
Committee, Farmers' Institute .... iii–iv
Comparative Statistics, Tables of 86–146
Cooking and What May Be Done With It, Miss Valeria Riley 653
Coombs, William C., Growing Clover 541
Co-Operation, M. C. Berkholder 634
Corn, Cultivation and Market of, A. H. Judy 422
Corn and Wheat, Average Prices by Decades, 1850-1900 64
Corn and Wheat, Annual Production since 1850 62–63
Cornfields, Some Studies from the Experiment Station, Prof. C. G. Williams. 444
County Agricultural Societies, Reports of 147–173
Coyner, D. Guin, Preparing Hogs for Market and Sanitary Conditions 564
Craig, Prof. John, Certain Phases of Orchard Management 501
Crop and Other Statistics 23–146
Crop Production, Factors in, With Special Reference to Plant Food, Prof. Cyril G. Hopkins 370
Culture of Fruit by the Farmer, The, W. G. Farnsworth 360

D

Delegates to the Annual Convention of State Board of Agriculture, List of .. 470
Derthick, F. A., Short Eulogy on the Lives and Work of Colonel J. H. Brigham and S. H. Ellis 419
Ditto, Theodore W., Economic Entomology 595
Do We Appreciate the Age in Which We Live? Miss Daisy Morey 672
Drake, J. T., Raising Lambs 560
Dunlap, R. W., The Modern Draft Horse 343

E

Economic Entomology, Theodore W. Ditto 595
Economy of Strength, Mrs. H. E. Allen 638
Education of Our Girls, The, Mrs. Mary E. Lee 439
Eisenman, Mrs. William, Woman as an Inventor 648
Ellis, S. H., Resolution Relative to Death of 418
Emery, Cynthia Peck, Pruning and Grafting 664

F

PAGE.

Factors in Crop Production, With Special Reference to Plant Food, Prof. Cyril G. Hopkins.... 370
Fair, Ohio State, Entries and Awards.... 174–248
Farmers' Girls, Our, Mary E. Smith.... 658
Farmers' Institutes, Benefits From, D. S. Snider.... 636
Farmers' Institutes, Fifteenth Annual Report.... 515
  Financial Statement.... 517
  Institutes Held in Ohio 1904-1905—Regular.... 520
  Institutes Held in Ohio 1904-1905—Independent.... 526
  Introduction, by Secretary W. W. Miller.... 515
  Lecturers, List of, and Their Topics.... 528
  Recapitulation.... 527
Farmers' Institutes, Selected Papers.... 537
  Alfalfa a Boon to the Farmers, Will H. Palmer.... 544
  Benefits from Farmers' Institutes, D. S. Snider.... 636
  Better Use of Time for Farm Women, Eunice L. Barrett.... 650
  Butter Making and the Cream Separator, W. L. Parrett.... 579
  Butter Making on the Farm, Mrs. Linnie Beacham.... 582
  Care of the Winter Dairy, The, W. A. Rice.... 576
  Cattle, Dr. H. M. Brown.... 555
  Cooking and What May Be Done With It, Miss Valeria Riley.... 653
  Co-Operation, M. C. Berkholder.... 634
  Do We Appreciate the Age in Which We Live? Miss Daisy Morey.... 672
  Economic Entomology, Theodore W. Ditto.... 595
  Economy of Strength, Mrs. H. E. Allen.... 638
  Farm Team, The, P. P. Mechling.... 552
  Feeding Hogs for Profit, R. G. Howell.... 568
  Fencing and Fences, Frank P. Miller.... 605
  Growing Clover, William C. Coombs.... 541
  Home Beautiful, The, Rena V. Johnson.... 620
  How to Make the Dairy Pay, J. A. Latzer.... 570
  Influence of Cultural Methods on Tobacco, The, Harry Rich.... 548
  Landlord's Share, The, E. E. Gephart.... 603
  Ohio Department of Highways, The, Hon. Sam Huston.... 627
  Our Domestic Sheep, Nihle E. Mills.... 561
  Our Farmers' Girls, Mary E. Smith.... 658
  Our Friends, the Birds, Mrs. Esta Coover Harvey.... 611
  Poultry Raising on the Farm, Mrs. S. A. Sproat.... 586
  Practical Education, A. Shirer.... 608
  Preparing Hogs for Market and Sanitary Conditions, D. Guin Coyner.. 564
  Proper Methods of Pruning, George H. Wright.... 592
  Pruning and Grafting, Cynthia Peck Emery.... 664
  Raising Lambs, J. T. Drake.... 560
  Relation of Landlord and Tenant, The, G. H. Brown.... 600
  Rural Free Delivery, F. S. Latham.... 623
  Rural Observations in Norway, Sweden and Russia, Mrs. Ellen M. Healey. 667
  Schools and Teachers, Miss Maude Baker.... 629
  Silo, The, W. W. Hyslop.... 551
  Soil Study, A. Alvin Stahl.... 537
  Some Legacies of the Nineteenth Century, Miss Lulu Moore.... 616
  Some Needs of the Rural Schools, Miss Susan J. Sweisel.... 632

PAGE.
  Some of My Experiences in Poultry Raising, Mrs. Ernest Tillson..... 584
  Training of the Child in the Home, Rine Schofield..................... 661
  Turkey-Raising, Mrs. J. J. Myers..................................... 589
  Woman as an Inventor, Mrs. William Eisenman.......................... 648
  Women's Clubs and the Work They are Doing, Mrs. W. E. Scott...... 641
  Young Man and the Farm, The, C. Sherman Parrett.................. 655
Farmers' Institute, State, Proceedings of................................ 333
  Burgess, A. F., Spraying for Control of Orchard Pests................ 336
  Dunlap, R. W., The Modern Draft Horse.............................. 343
  Farnsworth, W. G., The Culture of Fruit by the Farmer.............. 360
  Fischer, Dr. Paul, Infectious Diseases of Animals and the Live Stock Industry of the State... 394
  Hopkins, Prof. Cyril G., Factors in Crop Production, With Special Reference to Plant Food.. 370
  Jamison, John M., Lamb Feeding...................................... 351
  Judy, A. H., Cultivation and Market of Corn.......................... 422
  Lazenby, Prof .Wlliiam R., Present Demands and Economic Use of Woods in Ohio.. 430
  Lee, Mrs. Mary E., The Education of Our Girls....................... 439
  McNeal, F. B., Success in Swine Breeding............................. 404
  Nicholls, John T., Ohio Dairying..................................... 411
  Nominations, Report of Committee on................................ 417
  Resolutions, Report of Committee on................................ 418
  White, A. L., Address of.. 333
  Williams, Prof. C. G., Some Studies from the Experiment Station Cornfields 444
Farm Team, The, P. P. Mechling.. 552
Farnsworth, W. G., The Culture of Fruit by the Farmer................. 360
Feeding Hogs for Profit, R. G. Howell................................. 568
Feed Stuffs, Commercial, Law to Regulate the Manufacture and Sale of. 331–332
Feed Stuffs, Commercial, Official Report............................ 319–323
Fencing and Fences, Frank P. Miller................................... 605
Fertilizers, Commercial, Law to Regulate the Manufacture and sale of.. 316–317
Fertilizers, Commercial, Official Report............................ 250–315
Fischer, Dr. Paul, Infectious Diseases of Animals and the Live Stock Industry of the State.. 394
Fleming, J. W., Assistant Secretary, Introduction to Annual Report..... ii
Fruit, Culture of, by the Farmer, W. G. Farnsworth...................... 360

G

Gephart, E. E., The Landlord's Share.................................. 603
Girls, The Education of Our, Mrs. Mary E. Lee.......................... 439
Growing Clover, William C. Coombs...................................... 541

H

Harvey, Mrs. Esta Coover, Our Friends, the Birds........................ 611
Healey, Mrs. Ellen M., Rural Observations in Norway, Sweden and Russia... 667
Herrick, Governor Myron T., Remarks of................................. 475

PAGE.
Highways, The Ohio Department of, Hon. Sam Huston.................. 627
Hogs, Preparing for Market and Sanitary Conditions, D. Guin Coyner..... 564
Home Beautiful, The, Rena V. Johnson.................................. 620
Hopkins, Prof. Cyril G., Factors in Crop Production, With Special Reference to Plant Food.. 370
Horse, The Modern Draft, R. W. Dunlap................................. 343
How to Make the Dairy Pay, J. A. Latzer............................... 570
Howell, R. G., Feeding Hogs for Profit................................ 568
Huston, Hon. Sam, The Ohio Department of Highways.................. 627
Hyslop, W. W., The Silo... 551

I

Infectious Diseases of Animals and the Live Stock Industry of the State, Dr. Paul Fischer.. 394
Institutes, Farmers', Report of, by W. W. Miller, Secretary.......... 515–516
Institutes, Farmers', Financial Statement........................ 517–525
Institutes Held in 1903-1904—Regular.................................. 520
Institutes Held in 1903-1904—Independent.............................. 526
Institutes, Recapitulation 527
Institute Lecturers and Their Topics.............................. 528–536
Inspector of Nurseries and Orchards, Report of................... 683–712
Introduction to Annual Report, W. W. Miller and J. W. Fleming........ ii

J

Jamison, John M., Lamb Feeding.. 351
Johnson, Rena V., The Home Beautiful.................................. 620
Judy, A. H., Cultivation and Market of Corn........................... 422

L

Lamb Feeding, John M. Jamison... 351
Lambs, Raising, J. T. Drake... 560
Landlord and Tenant, Relation of, George Brown........................ 600
Landlord's Share, The, E. E. Gephart.................................. 603
Latham, F. S., Rural Free Delivery.................................... 623
Latzer, J. A., How to Make the Dairy Pay.............................. 570
Laws Relating to Live Stock and the Board of Live Stock Commissioners, Its Duties, Etc.. 746–766
Lazenby, Prof. William R., Present Demands and Economic Use of Woods in Ohio 430
Lecturers Employed by the Ohio State Board of Agriculture, List of...... 520
Lee, Mrs. Mary E., The Education of Our Girls......................... 439
List of Commercial Feed Stuffs Properly Licensed...................... 330
List of Commercial Fertilizers Properly Licensed................. 312–315
Live Stock Commissioners, Report of State Board of............... 713–774

M

PAGE.

McGinnis, J. S., Secretary, The Ohio State Protective Association........ 676
McNeal, F. B., Success in Swine Breeding.............................. 404
Mechling, P. P., The Farm Team.. 552
Members of the Ohio State Board of Agriculture, Election of.............. 513
Miller, Frank P., Fencing and Fences.................................. 605
Miller, W. W., Secretary, Introduction to Annual Report............. ii
Miller, W. W., Secretary, Official Report on Commercial Feed Stuffs... 319–330
Miller, W. W. Secretary, Official Report on Commercial Fertilizers.... 250–315
Mills, Nihle E., Our Domestic Sheep.................................. 561
Modern Draft Horse, The, R. W. Dunlap................................ 343
Moore, Miss Lulu, Some Legacies of the Nineteenth Century............. 616
Morey, Miss Daisy, Do We Appreciate the Age in Which We Live?........ 672
Myers, Mrs. J. J., Turkey Raising..................................... 589

N

Nicholls, John T., Ohio Dairying...................................... 411
Nomination of Candidates for Ohio State Board of Agriculture........... 483
Nominations, Report of Committee on.................................. 417
Nurseries and Orchards, Report of Inspector of....................... 683–712

O

Ohio Dairying, John T. Nicholls....................................... 411
Ohio Department of Highways, The Hon. Sam Huston...................... 627
Ohio State Board of Agriculture, Officers and Members, 1904-1905..... iii–iv
Ohio State Board of Agriculture, Executive Committee, 1904-1905..... iii–iv
Ohio State Board of Agriculture, Farmers' Institute Committee 1904-1905 iv-v
Ohio State Board of Agriculture, Auditing Committee, 1904-1905...... iii–iv
Ohio State Board of Agriculture, List of Members from 1846-1905..... v–viii
Ohio State Board of Agriculture, Table Showing Receipts of Each Fair
  and Place of Holding... ix
Ohio State Board of Agriculture, Sixtieth Annual Meeting of............. 469
  Auditing Committee, Report of...................................... 483
  Bachelder, Governor N. J., Remarks of.............................. 475
    Address—Rural Development... 494
  Carpenter, J. L., Address of....................................... 471
  Craig, Prof. John, Certain Phases of Orchard Management............ 571
  Delegates, List of... 470
  Election of Members.. 513
  Financial Statement 481
  Herrick, Governor Myron T., Remarks of............................. 475
  Invocation, Dr. W. I. Chamberlain.................................. 469
  Nomination of Candidates... 483
  Resolutions, Report of Committee on................................ 513
  Thompson, Dr. W. O., Agricultural Education........................ 485
Ohio State Board of Agriculture, Transactions of.................... 1–22
Ohio State Fair, Entries and Awards.................................. 174–248
Ohio State Farmers' Institute, Nomination of Officers.................. 417

PAGE.
Ohio State Protective Association, The, J. S. McGinnis, Secretary.......... 676
Orchard Management, Certain Phases of, Prof. John Craig................ 501
Orchard Pests, Spraying for Control of, A. F. Burgess.................... 336
Our Domestic Sheep, Nihle E. Mills...................................... 561
Our Farmers' Girls, Mary E. Smith...................................... 658
Our Friends, the Birds, Mrs. Esta Coover Harvey......................... 611

P

Palmer, Will H., Alfalfa a Boon to the Farmers.......................... 544
Parrett, C. Sherman, The Young Man and the Farm...................... 655
Parrett, W. L., Butter Making and the Cream Separator................. 579
Poultry Raising on the Farm, Mrs. S. A. Sproat.......................... 586
Poultry Raising, Some of my Experiences in, Mrs. Ernest Tillson.......... 584
Practical Education, A. Shirer.. 608
Preparing Hogs for Market and Sanitary Conditions, D. Guin Coyner...... 564
Protective Association, The Ohio State, J. S. McGinnis, Secretary.......... 676
Pruning and Grafting, Cynthia Peck Emery............................... 664
Pruning, Proper Methods of, George H. Wright........................... 592

R

Raising Lambs, J. T. Drake... 560
Relation of Landlord and Tenant, The, G. W. Brown...................... 600
Report, Annual, Introduction to, by W. W. Miller, Secretary, and J. W.
Fleming, Assistant Secretary.. ii
Report of Committee on Resolutions................................ 418–419
Reports of County Agricultural Societies............................ 147–173
Report of Inspector of Nurseries and Orchards....................... 683–712
Report of State Board of Live Stock Commissioners................... 713–774
Resolutions, Reports of Committees on.............................. 418, 513
Rice, W. A., The Care of the Winter Dairy.............................. 576
Rich, Harry, The Influence of Cultural Methods on Tobacco............... 548
Riley, Miss Valeria, Cooking and What May Be Done With It............. 653
Rural Development, Governor N. J. Bachelder........................... 494
Rural Free Delivery, F. S. Latham...................................... 623
Rural Observations in Norway, Sweden and Russia, Mrs. Ellen M. Healey. 667
Rural Schools, Some Needs of the, Miss Susan J. Sweisel.................. 632

S

Schofield, Rine, Training of the Child in the Home....................... 661
Schools and Teachers, Miss Maude Baker................................ 629
Scott, Mrs. W. E., Women's Clubs and the Work They are Doing.......... 641
Sheep, Our Domestic, Nihle E. Mills.................................... 561
Shirer, A., Practical Education... 608
Silo, The, W. W. Hyslop.. 551
Smith, Mary E., Our Farmers' Girls..................................... 658
Snider, D. S., Benefits from Farmers' Institutes.......................... 636

PAGE.
Societies, County Agricultural, Reports of........................... 147–173
Some Legacies of the Nineteenth Century, Miss Lulu Moore............... 616
Some of My Experiences in Poultry Raising, Mrs. Ernest Tillson.......... 584
Some Studies from the Experiment Station Cornfields, Prof. C. G. Williams. 444
Spraying for Control of Orchard Pests, A. F. Burgess..................... 336
Sproat, Mrs. S. A., Poultry Raising on the Farm.......................... 586
Stahl, A. Alvin, Soil Study.. 537
State Fair, Ohio, Entries and Awards..................................... 174–248
Statistics, Crops, Live Stock, Etc.. 23–146
Statistics, Table Showing Annual Production of Wheat and Corn and Average Price since 1850.. 64
Statistics, Table Showing Prices of Other Farm Products than Wheat and Corn since 1855.. 65
Statistics Reported by County Auditors................................ 66–68
Statistics, Comparative Tables of.. 86–146
Sweisel, Miss Susan J., Some Needs of the Rural Schools.................. 632
Swine Breeding, Success in, F. B. McNeal................................ 404

T

Thompson, Dr. W. O., Agricultural Education............................ 485
Tillson, Mrs. Ernest, Some of My Experiences in Poultry Raising........... 584
Tobacco, The Influence of Cultural Methods on, Harry Rich.............. 548
Training of the Child in the Home, Rine Schofield........................ 661
Transactions of Ohio State Board of Agriculture......................... 1–22
Turkey Raising, Mrs. J. J. Myers.. 589

W

Wheat and Corn, Annual Production of since 1850....................... 62–63
Wheat and Corn, Average Prices by Decades, 1850-1900.................. 64
White, A. L., Address of.. 333
Williams, Prof. C. G., Some Studies from the Experiment Station Cornfields. 444
Winter Dairy, The Care of the, W. A. Rice................................ 576
Woman as an Inventor, Mrs. William Eisenman............................ 648
Women's Clubs and the Work They are Doing, Mrs. W. E. Scott........... 641
Woods in Ohio, Present Demands and Economic Use of, Prof. Wm. R. Lazenby 430
Wright, George H., Proper Methods of Pruning............................ 592

Y

Young Man and the Farm, The, C. Sherman Parrett......................... 655

TRANSACTIONS

OF THE

Ohio State Board of Agriculture

For the Year 1904.

Department of Agriculture,
Columbus, January 14, 1904.
7:30 o'clock p. m.

The following named gentlemen, members and members-elect of the Ohio State Board of Agriculture, met for organization:

Thaddeus E. Cromley, Ashville, Pickaway County	Term expires Jan. 1905
Thomas L. Calvert, Selma, Clark County	Term expires Jan. 1905
William Miller, Gypsum, Ottawa County	Term expires Jan. 1906
Jeremiah L. Carpenter, Carpenter, Meigs County	Term expires Jan. 1906
Charles H. Ganson, Urbana, Champaign County	Term expires Jan. 1907
Alferd P. Sandles, Ottawa, Putnam County	Term expires Jan. 1907
Samuel Taylor, Grove City, Franklin County	Term expires Jan. 1908
Roldon O. Hinsdale, Wadsworth, Medina County	Term expires Jan. 1908
Lindley P. Bailey, Tacoma, Belmont County	Term expires Jan. 1909
Edwin L. Lybarger, Spring Mountain, Coshocton County	Term expires Jan. 1909

The oath of office was administered by J. W. Fleming, notary public, to L. P. Bailey and E. L. Lybarger, the newly elected members.

Mr. A. P. Sandles was elected as temporary chairman, and on calling the members to order announced, as the first business, the election of a president.

Mr. Ganson nominated for president, Mr. J. L. Carpenter, and moved that the secretary cast the ballot. The motion was agreed to, and the ballot being cast as per instructions, Mr. Carpenter was declared the duly elected president of the Board for the ensuing term.

The president took the chair and announced as the next business in order the election of a vice-president.

Mr. Hinsdale nominated for vice-president, Mr. Wm. Miller, and there being no further nominations the secretary was instructed to cast the ballot for Mr. Miller, whereupon he was declared the duly elected vice-president.

For treasurer Mr. Taylor nominated Mr. T. L. Calvert. The secretary was instructed to cast the ballot and Mr. Calvert was declared elected.

The next in order being the election of an assistant secretary, Mr. Hinsdale nominated for assistant secretary for the ensuing term of four years the present incumbent, Mr. Jas. W. Fleming. The secretary was instructed to cast the ballot, whereupon Mr. Fleming was declared the duly elected assistant secretary for the ensuing term of four years.

Mr. Hinsdale then moved that the compensation for Secretary W. W. Miller and Assistant Secretary Jas. W. Fleming for their respective terms of office, be the same in amount per annum as received by them for 1903, which was unanimously agreed to.

The treasurer for the past term having fulfilled the requirements of the bond given by him, it was, on motion of Mr. Ganson, directed that the bond be returned.

On motion of Mr. Taylor it was agreed that the bond of the treasurer-elect be furnished by a surety company at the expense of the Board.

On motion the Board adjourned to meet at the call of the president.

Department of Agriculture,

Columbus, March 2, 1904.

3:00 o'clock p. m.

The Board convened with all members present except Messrs. Cromley and Miller, who were absent on account of sickness.

President Carpenter occupied the chair and called for the reading of the minutes of the last two meetings which, on being read, were approved.

The committee appointed at a previous meeting to investigate the status of the county agricultural societies of the State and also that of the State Board of Agriculture, made verbal report through Secretary Miller, a member of the committee.

The committee referred to the question of constitutionality of methods of organization, and also to certain action now in the courts, the consideration of which hinges on this question. The committee also referred to conditions that seemed to be materializing that would require further time before a final report could be made.

Mr. Taylor moved that the committee be instructed to confer with the Governor and the Attorney-General relative to the matters in question, and that it then take such action, by bill or otherwise, as may be deemed best for the interest of agriculture and the State.

The motion was agreed to.

Mr. Taylor moved that Mr. A. F. Burgess be appointed Chief Inspector of Nurseries and Orchards, for a term of two years from February 1, 1904, at a salary of eighteen hundred ($1,800.00) dollars per annum, provided an appropriation is made by the General Assembly, to sustain the Division of Nursery and Orchard Inspection.

The motion prevailed.

The secretary reported the following action as having been taken by the Ohio Senate on March 1, 1904:

On motion of Senator Austin, the following resolution was adopted:

Resolved, That the President of the Senate be authorized to appoint a committee of five to investigate the legal obligation of the State to pay outstanding bonds issued by the State Board of Agriculture, and to determine the relation existing between the State Board of Agriculture and the State of Ohio thereto, and to further investigate what reports and accounting, if any, are submitted by the State Board of Agriculture to the State of Ohio, and to further investigate the receipts and expenditures of the State Board of Agriculture, and to report their findings, together with whatever recommendations they may see fit to make, to the Senate on March 8, 1904.

The President of the Senate appointed the following committee: L. L. H. Austin, R. W. Dunlap, O. E. Harrison, T. H. Ricketts and S. D. Crites.

On motion the Board adjourned to meet at the call of the president.

Department of Agriculture,

Columbus, March 9, 1904.

10:00 o'clock a. m.

The Board met pursuant to the call of the president. Members all present except Messrs. Cromley and Lybarger.

The minutes of the preceding meeting were read and approved.

The president called attention to the Lawrence County Agricultural Society matter previously brought to the attention of the Board, when the secretary explained further the nature of the case and its present condition in the courts of Lawrence county. He also reported the result of an investigation by the Board as to the manner of organization of said county society.

President Carpenter made some further explanation regarding the standing of the case in court, whereupon Mr. Ganson offered the following, which was unanimously adopted:

Whereas, On the 15th day of January, 1903, and the 14th day of January, 1904, certificates under sections 3697-99 inclusive, Revised Statutes of Ohio, were issued to J. A. Bowen, president of the Lawrence County Agricultural Society; and

Whereas, Said certificates were issued upon the representation and belief that the statutes of the State of Ohio and of the rules of the Ohio

State Board of Agriculture had been complied with by said Lawrence County Agricultural Society; and

Whereas, Upon investigation it has been ascertained that said Lawrence County Agricultural Society had not prior to the date of said certificates, organized as required by the rules of said State Board, in this, to-wit: That the rules of said Ohio State Board of Agriculture require that in the organization of any such society, there must be ten members residing in not fewer than nine townships, and that there shall not be more than one member in any one township except the township in which the agricultural fair is held, and that the ten members in the organization of said Lawrence County Agricultural Society reside in five townships of the said county;

Therefore, Be it resolved by the Ohio State Board of Agriculture that the certificates heretofore issued to J. A. Bowen, President of said Lawrence County Agricultural Society, and dated January 15, 1903, and January 14, 1904, for presentation to the auditor of Lawrence county for the purpose of obtaining the per capita mentioned in section 3697, Revised Statutes of Ohio, be and the same are hereby revoked and held for naught.

The secretary called attention to the withholding of certificate for 1902, from the Montgomery County Agricultural Society on the grounds that said society had not complied with the rules, which certificate by action of this Board February 11, 1903, was directed to be withheld until said society should give evidence, in writing, that the irregularities complained of would be corrected, and that the certificate for 1903 was withheld because the report of said county society for that year had not the required affidavit attached.

In the matter of report for 1903, the secretary presented an amended report that had been received and to which was attached the proper affidavit.

In view of the fact that the Montgomery County Agricultural Society did not submit its report for 1903 until too late for the signature of the president of the State Board of Agriculture officiating for that year, Mr. Ganson moved that the president be now directed to issue to said society the certificate relative to its report for 1903, upon which to draw the county fund to which it may be entitled for the year. The motion was agreed to.

Referring to the resolution adopted by the Ohio Senate, providing for a committee to investigate the condition of the State Board of Agriculture and its relations to the State, the secretary presented the following as the report of said committee, which report was properly presented to the Senate and by motion made a part of its proceedings, March 8:

Report of the special committee of the Senate to investigate the condition of the Ohio State Board of Agriculture:

Your committee appointed to investigate conditions relative to the State Board of Agriculture felt it an incumbent duty to first inform itself concerning the work of this Board, and the Agricultural Department under its management, together with the authority and direction for the work, and afterwards the source of means and the application of the same for the expense of the work.

In examining into the history of the board and its work, we find that from 1846 to 1880, its work consisted of the preparation and publication of an annual report, containing agricultural statistics reproduced from other sources; abstracts of reports from county agricultural societies; addresses and lectures on agricultural topics, and the proceedings of the annual agricultural convention, held, agreeable to the statutes of the State, for deliberation as to the wants and prospects of agriculture.

The Board conducted during these years a general correspondence regarding the agricultural affairs of the State, but the greatest work in those years was the preparation for and the holding of the annual State Fairs.

The permanent office force of the Board prior to 1880 consisted of a secretary and a clerk. The appropriations made by the State, for the expense of the office, or Agricultural Department, was usually about four thousand ($4,000.00) dollars. This covered all expenses of salaries, handling of reports, postage, express, telegraph and other contingent expenses. No part of the annual appropriation was expended for State Fair expense. It seems to have been the policy of the Board, and we believe still continues to be, to request only such appropriations from the State as were actually required for the work to be done.

The State Fair and Industrial Exposition, now authorized by Section 3693 of the Revised Statutes, we find to be a self-sustaining institution, so far as the expense of operation is concerned. Prior to 1883 it was without a permanent place of holding. In that year the State Board of Agriculture had of surplus State Fair earnings the sum of seventeen thousand two hundred and fifty-two ($17,252) dollars, with which it began the purchase of real estate for a State Fair grounds.

The surplus from subsequent fairs was also devoted to this purpose, when in 1886 the first State Fair was held on part of the grounds now occupied.

Having secured grounds with its own earnings, the State Board of Agriculture, before holding the first fair on this acquired property, requested the General Assembly to permanently protect it to the State, and forbid encumbrance in any manner without the consent of the State, and such a law was enacted May 4, 1885.

Since the original purchases, twenty-five additional acres were found to be necessary, and were secured, payment being made from the proceeds of bonds authorized by the General Assembly for fair ground improvements.

It is shown by the records of the Board that some years the receipts of the fair did not cover expenses and the Board was compelled to borrow money for payment of premiums and expenses, but the borrowed money has always been paid from the earnings of future fairs, and never by any appropriations from the State. It is quite clearly shown that all surplus earnings of the annual fairs have gone into purchase of grounds, improvements and betterments.

We find that the State has aided in the erection of buildings and the improvement of these grounds, by authorizing the issue of bonds, as follows:

By Act of May 1, 1885, $80,000; by Act of April 12, 1898, $80,000; by Act of March 29, 1900, $120,000; total, $280,000.

We find that the total cost of the State Fair grounds, with buildings and improvements, has been $557,663.

Since the original purchase of grounds by the State Board of Agriculture there has been a very great rise in real estate values in the immediate vicinity of the grounds. The fair grounds now comprise one hundred and fifteen acres. The increase in their value is placed at $399,970, making the total value of fair grounds and improvements at this time $957,633, an excess of $677,633 over and above the amount of bonds authorized by Acts of the General Assembly.

We find that of the $280,000 bonds referred to, $120,000 have already been paid by the State, leaving $160,000 still to be paid, and which, according to the conditions of the bonds, are payable $20,000 each year until paid.

The purchase of grounds as a permanent home for the Ohio Fair has proven to be a very wise transaction from a money point of view, and as a better means of promoting the agricultural and manufacturing interests of the State has placed Ohio in the front line with other progressive states.

At the close of the last calendar year, December 31, 1903, it was found that in the fund from which State Fair and other miscellaneous expenses are paid, there was a balance of $15,981, but since that date much of this balance has been expended for expenses of farmers' institutes, fertilizer inspection and other work not provided for by State appropriations, and the balance still remaining will be required for repairs and maintenance of grounds and buildings until another fair.

Recurring to the work of the Board through the Department of Agriculture, we find that in 1880 the general scope of agricultural work was enlarged and a system of work by divisions was inaugurated.

The first new division to be established was that of monthly crop and live stock reporting. The legislature, by increasing the appropriations to the Board, made provision to sustain this work, and afterwards added to it by an Act of the General Assembly, requiring county auditors to return direct to the secretary of agriculture, the agricultural statistics gathered each year by the township assessors.

This crop and live stock reporting work has grown from year to year. It involves a corps of correspondents from the several townships of the State, numbering about fifteen hundred persons, and an increased clerical force in the department.

The next important division established by the Board was that of county farmers' institutes. This institute work grew so rapidly in public favor and the demand for them became so great in the several counties of the State that the General Assembly, by its Act of April 26, 1890, made it a duty of the State Board of Agriculture to continue the work, and made special provisions therefor. We find that the county institutes held under the auspices of the State Board of Agriculture increased from about forty to two hundred and forty-seven last year, and we are informed that the demand is not fully met.

By Act of the General Assembly March 16, 1881, provision was made that required the secretary of the State Board of Agriculture to make an inspection and analysis of all the commercial fertilizers sold or offered for sale in Ohio. This division of the service has entailed a great amount of careful work and an increase of office force.

By Act of the General Assembly May 10, 1902, the inspection of nurseries and orchards was made a duty of the Board, and such a division was, in accordance with that Act, placed in immediate operation. It entailed additional help and additional expense.

As the work of the State Board of Agriculture increased and new divisions were established, agreeable to law, in the Department of Agriculture, we find that the working force and the expense gradually increased from time to time. State appropriations were made to meet the requirements as they existed.

The annual appropriations have been increased from $6,800 in 1884 to $7,500 in 1890; to $9,000 in 1893; to $15,000 in 1898, and to $16,000 in 1903, besides an additional $15,000 for the two years 1902 and 1903, made especially for the expense of nursery and orchard inspection.

The paid force required to conduct the work, as it has been developed and added to by law, increased from two or three persons at the period first referred to in this report to nineteen persons in 1903, not including thirty institute lecturers employed during the institute seasons.

The books of the Board show that the appropriations annually made by the State have been expended wholly for the work of the department in the different authorized divisions of the service, including salaries of officers, clerks and inspectors, and the actual expenses of the members of the Board in department work.

No part of the State appropriations have been applied to State Fair expense; the books and accounts of that institution are kept entirely separate from the appropriation books and accounts.

Furthermore, your committee finds upon the declaration of the Attorney-General that the obligation of the State to pay the above bond issue is legal and binding, and that the State is bound in good faith by special recital in the bonds to pay the same; therefore, there being no further controversy upon this subject, the State is obliged to pay bonds and interest to the extent of $175,000 yet due.

Furthermore, your committee recommends the passage of the bill authorizing the payment of $40,000 of bonds and $15,000 of interest, in special order of today, for the reason that the State is obliged to pay these bonds and interest, which are now due and for which coupons are already being presented for payment.

Your committee found a correct and very comprehensive system of accounts for all the financial transactions of the Board, and we believe the Board has complied fully with all the requirements of the various laws enacted for its government and direction.

Itemized accounts of the receipts and disbursements of the Board are found in the annual report of the Board made to the General Assembly and in the reports of the Auditor of State.

Furthermore, your committee finds that the title of the lands and property held by the State Board of Agriculture is vested in said Board, and since the same has been in part paid for out of funds belonging to the State, your committee recommends that this title be transferred from the Board, where it now exists, to the State. The State Board of Agriculture has agreed to call a meeting of said Board and quit claim the State Fair grounds, together with all buildings and appurtenances, situated in Franklin county, State of Ohio, and belonging to said Board, to the State of Ohio within ten days.

Your committee upon further investigation finds that the funds expended by the State Board of Agriculture involves three separate funds, the first under the title of Encouragement of Agriculture, the second under Nursery and Orchard Inspection, and the third the bank fund.

The system of vouchers, expense accounts and books have been gone over, as far as the time and opportunity would permit, and in each and every instance we find the method of disbursing funds to be the most accurate and business like, and the checks placed upon each and every one of the twenty employes in the use of expense money and funds otherwise used were very creditable.

We find that all moneys appropriated directly by the State were paid out by vouchers through the State Auditor, and that all moneys checked through the bank fund were none other than those essential to the business like the management of an institution of the magnitude of the State Fair.

After due deliberation, your committee begs to say that the entire management of the State Board of Agriculture as indicated by its system of bookkeeping and detail work in the office reflects great credit upon the secretary and upon the Board.

Respectfully submitted,
L. L. H. AUSTIN,
R. W. DUNLAP,
S. D. CRITES,
O. E. HARRISON,
THOS. H. RICKETTS.

The committee of the Senate having recommended that the title to State Fair grounds be vested in the State, and this Board having no objection to such transfer, and concurring therein, Mr. Sandles submitted the following, which was adopted:

Resolved, That the Attorney General be requested to prepare the proper deed for quit claiming the State Fair grounds to the State of Ohio, and the president and secretary are hereby authorized and directed to execute such deed.

The president announced the appointment of the following standing committees:

EXECUTIVE COMMITTEE.

Jeremiah L. Carpenter, President.
Thaddeus E. Cromley.
Thomas L. Calvert.
Alfred P. Sandles.
Samuel Taylor.

FARMERS' INSTITUTE COMMITTEE.

Thaddeus E. Cromley, Chairman.
William Miller.
Roldon O. Hinsdale.

AUDITING COMMITTEE.

Charles H. Ganson, Chairman.
Edwin L. Lybarger.
Lindley P. Bailey.

Mr. Taylor moved that the work of constructing sewage and drainage on the State Fair grounds be conditioned on an appropriation being made by the State for fair ground buildings and improvements.

The motion was agreed to.

On motion of Mr. Hinsdale the dates recommended by the American Association of Fairs and Expositions for the Ohio State Fair of 1904, viz: August 29, 30, 31 and September 1, 2, were ratified.

On motion of Mr. Calvert the president and secretaries were constituted a committee on special attractions, with power to act.

On motion of Mr. Hinsdale five thousand dollars was agreed upon as the amount that may be devoted to State Fair advertising.

On motion of Mr. Calvert it was agreed that the issue of meal tickets during the fair be dispensed with.

Mr. Ganson moved that straw for first bedding of live stock, horses and cattle, twenty-five pounds each stall, and a proportionate amount for each sheep and swine pen be furnished by the Board, and that bedding thereafter required, be furnished by the exhibitor at his own expense. The motion was agreed to.

The revision of the premium list was referred to the secretaries and members of the Board in charge of the respective departments.

On motion the Board adjourned to meet at the call of the President.

ARCHER HOUSE,

WOOSTER, OHIO, June 16, 1904.

2 o'clock, p. m.

The Board met pursuant to the call of the president with all members present except Mr. Taylor. On motion the reading of the minutes of the preceding meeting were dispensed with.

The secretary submitted a communication from Mr. Fred A. Guth, of Waverly, Ohio, relative to a piano used in the family of Governor Worthington, and suggesting the securing of the same as a historic relic.

On motion of Mr. Cromley the secretary was directed to refer the communication to Hon. E. O. Randall of the State Archæological and Historical Society.

The secretary presented the application of John Mahoney for Chief of State Fair Police.

On motion of Mr. Calvert the appointment of judges for the several departments of the fair was referred to the members in charge with instructions to report to the secretary for record.

Mr. James Franz, of Bluffton, Ohio, made written request for a Galloway cattle class at the next fair, and similar request for Cheviot sheep was made by Mr. E. S. Foust.

It was agreed as not expedient to change the premium list or classifications for this year, and the secretary was instructed to invite the above named gentlemen and others interested in Galloway cattle and Cheviot sheep to confer with the Board when the revision of premium list is taken up for the State Fair of 1905.

On motion a recess was taken subject to the call of the president.

When the Board was reconvened the secretary reported the progress being made on the sewer construction throughout the State Fair grounds. The secretary called attention to a horse and rig that could be dispensed with, the horse having gone lame. On motion of Mr. Hinsdale, the disposal of the horse and rig was referred to Mr. Cromley. The secretary reported the appropriation made by the General Assembly for buildings and sewers on the State Fair grounds and submitted suggestive plans for necessary buildings that should be erected and that possibly could be erected with the funds available. The secretary explained in detail the necessity for a new assembly hall, and submitted plans with an estimate of its cost.

Mr. Lybarger moved that the secretary be authorized and instructed to contract with the lowest and best bidder, for the remodeling of the east main building, so as to provide an assembly hall, as per the plans presented. The motion was agreed to.

In preparing plans for a power hall and poultry building, many suggestions were considered, whereupon Mr. Sandles moved that the plans as submitted be approved and when fully perfected in detail, that the secretary be instructed to invite proposals for their construction, and report the same to the Board at a future meeting. The motion prevailed.

In perfecting the plans for a poultry building, the question of open or closed structure was, on motion of Mr. Miller, referred to the secretary and member in charge of the poultry department.

On motion the secretary was instructed to notify parties or firms having private machine buildings on the fair grounds, to remove the same on or before November 1st, next.

On motion the Board adjourned to meet at the call of the president.

Agreeable to instructions, the following named judges for the State Fair of 1904 were reported by the members in charge:

- Mr. Lybarger for the Sheep Department—
  - Coarse Wools, Mr. Chafee, Brecksville, Cuyahoga County, Ohio.
  - Fine Wools, Oliver Watkins, Maynard, Belmont County, Ohio.
- Mr. Taylor for Womans' Department—
  - China Painting, Joseph Bearman, Columbus, Ohio.
  - Art Needle Work, Miss Berdina Ohmer, Dayton, Ohio.
- Mr. Sandles for Swine Department—
  - O. P. Walcott, Conover, Ohio.
  - W. H. Eversole, Columbus Grove, Ohio.
- Poultry—
  - S. G. Case, Shreve, Ohio.
  - F. J. Marshall, Middletown, Ohio.
  - M. M. Barger, Mt. Gilead, Ohio.
- Mr. Bailey for Cattle Department—
  - J. L. Henderson, Washington, Pa.
  - C. L. Gerlaugh, Osborn, Ohio.
  - L. P. Sisson, Newark, Ohio.
- Mr. Miller for Fruit and Farm Products—
  - Farm Products, Prof. C. G. Wiliams, Wooster, Ohio.
    - F. W. Liles, Collins, Ohio.
    - M. M. Meisse, Lancaster, Ohio.
  - Fruit, G. E. Rowe, Grand Rapids, Michigan.
  - Plants and Flowers, H. W. Rhymers, Elmore, Ohio.
  - Dairy Products, Prof. John Michels, Agricultural College, Mich.

Administration Building, State Fair Grounds,

Columbus, August 27, 1904,

10:30 o'clock a. m.

The Board convened and was called to order by Vice-president Wm. Miller. President Carpenter and Mr. Cromley were absent. The minutes of the two previous meetings were read and approved.

The secretary reported that the resolutions adopted at the meeting of March 9, requesting the Attorney-General to prepare a quit claim deed of fair grounds to the State, had been presented to that officer, but he had failed to act, giving as a reason that it was not necessary and that the State Board of Agriculture had no authority of law for making such a deed.

The committee to whom was referred the Lawrence County Agricultural Society matter, having made report at the March meeting, was, on motion of Mr. Sandles, discharged.

The secretary reported the sewer system as ordered constructed by the Board to be complete, except some few small branches and the connecting up of the outside closets. The completion of the association hall in east central building was also reported.

Plans were submitted for a machinery and poultry building when the secretary suggested that it might be advisable, in inviting bids for construction, to include an additional machinery building to be let at the Board's option.

Mr. Taylor moved that the secretary be directed to invite proposals for the construction of two machinery buildings and one poultry building, according to plans presented, with the condition that the Board may accept proposals for such of the buildings it may desire to erect, and the right to reject any or all bids. The motion was agreed to.

The committee appointed some time ago to locate and construct cisterns on the fair grounds, being unable to report, Mr. Ganson moved that the committee be continued and the motion was agreed to.

Mr. Lybarger reported that certain exhibitors of Rambouillet sheep had requested the privilege of selecting a judge for that particular type. The matter was referred to the member in charge of the sheep department.

Mr. Sandles moved that the issuing of rebate tickets be discontinued and that in each department the member in charge be authorized to add to account of judges, amount of admissions paid by them, except that in the speed department the member in charge be further authorized to issue orders on the treasurer for return of gate admissions that may be paid by horsemen.

On motion the Board adjourned to meet at the call of the president.

Administration Building, State Fair Grounds,
Columbus, August 30, 1904,
2:00 o'clock p. m.

The Board met on call of the president. Members all present except Messrs. Ganson and Lybarger.

On motion of Mr. Taylor it was agreed that a meeting of the Board be held at Department of Agriculture, Tuesday, September 20, at 10 o'clock a. m., and that the Farmers' Institute Committee meet the day previous.

On motion the Board adjourned to meet at the call of the president.

Department of Agriculture,
Columbus, September 20, 1904,
10:00 o'clock a. m.

The Board met pursuant to adjournment with President Carpenter in the chair and all members present.

The minutes of the meetings held during the State Fair were read and approved.

A bill of $31.00 for straw furnished for a first bedding of speed horse barns was approved and ordered paid.

The secretary reported the following advertisement in the Columbus city papers in accordance with the action of the Board at its meeting, August 27:

TO BUILDING CONTRACTORS.

Columbus, September 12, 1904.

The Ohio State Board of Agriculture will be glad to receive sealed proposals for the erection of exhibition buildings on the State Fair grounds, Columbus, as follows: One, bid for the erection of a poultry building; two, bid for the erection of a machinery building; three, bid for the erection of one poultry and one machinery building; four, bid for the erection of two machinery buildings; five, bid for the erection of one poultry and two machinery buildings. Proposals should be filed at the Department of Agriculture, State House, at or before twelve o'clock m., Saturday, October 1, 1904. Plans and specifications will be found at the office of H. A. Linthwaite, Architect, State and High streets, Columbus, and at the Department of Agriculture, State House. The Board reserves the right to reject any or all bids. W. W. Miller, *Secretary*.

On consideration of a financial statement presented, Mr. Cromley moved that in the consideration of proposals for the erection of buildings under the advertisement, that two machinery buildings and a poultry building be contracted for, provided the total cost shall not exceed the sum of sixty thousand dollars. The motion was agreed to.

On motion of Mr. Hinsdale the secretary was instructed to notify the owners of private buildings located north of the present power hall, to remove the same by November 10th next.

On motion of Mr. Cromley it was agreed that proposals for the erection of buildings be considered at the next meeting of the Board, which shall be held on the call of the president.

The secretary reported the following which was ordered placed on record:

THE NATIONAL GRANGE OF THE PATRONS OF HUSBANDRY.

OFFICE OF THE SECRETARY,

TIPPECANOE CITY, OHIO, September 1, 1904.

HON. W. W. MILLER, *Columbus, Ohio*:

MY DEAR SIR:—The following resolution was passed by the members of the Grange in annual reunion at the Ohio State Fair Grounds September 1, 1904:

Whereas, The Ohio State Board of Agriculture has so kindly remembered the interests of the Patrons of Husbandry and farmers of the State as to erect a beautiful and commodious hall for their convenience and comfort during their attendance at the State Fair; and

Whereas, They have so generously tendered its use to the members of the Ohio State Grange for their annual reunions;

Therefore, resolved, that we, the Patrons of Husbandry of Ohio, do hereby express our appreciation of this generous act and sincerely thank Hon. W. W. Miller and all the other members of the Ohio State Board of Agriculture.

Please convey our best wishes with the above to the Board.

C. M. FREEMAN,
Secretary Ohio State Grange.

The secretary presented a communication from fruit exhibitors at the last State Fair, requesting that a sixth premium be allowed on county display of fruits. Action on the request was deferred.

A communication relative to an increase of premiums at the next fair for county displays of farm products was ordered filed for future consideration.

Mr. Cromley, Chairman of the Farmers' Institute Committee, submitted the following report which was adopted:

Columbus, Ohio, September 20, 1904.

To the President and Members of the Ohio State Board of Agriculture:

Gentlemen:—We, the undersigned members of your Farmers' Institute Committee, met at the Department of Agriculture yesterday, the 19th inst., for the purpose of considering applications for farmers' institutes to be held under the management of the State Board of Agriculture for the coming season. After a careful consideration of all petitions, reports and communications, we recommend that institutes be established at the following named places for the season of 1904-1905, specific dates for the same to be fixed by Secretary Miller:

COUNTY AND TOWN.

ADAMS—
Cherryfork,
Wamsley,
Peebles.

ALLEN—
Spencerville,
Beaverdam,
Delphos,
Harrod.

ASHLAND—
Nova,
Loudonville.

ASHTABULA—
Andover,
Geneva,
Orwell,
Pierpont.

ATHENS—
Athens,
Coolville,
Albany,
Amesville.

AUGLAIZE—
Uniopolis,
Buckland,
Cridersville.

BELMONT—
Loydsville,
Colerain,
Barnesville.
Morristown.

BROWN—
Fayetteville,
Mt. Orab,
Ripley.

BUTLER—
Collinsville,
Monroe,
Oxford.

CARROLL—
Carrollton,
Malvern.

COUNTY AND TOWN.

CHAMPAIGN—
Westville,
Kings Creek.

CLARK—
Vienna Crossroads.
Tremont City,
Pitchin,
Donnelsville.

CLERMONT—
Owensville,
Laurel.

CLINTON—
Midland,
Wilmington.

COLUMBIANA—
New Waterford,
Lisbon,
Damascus,
Rogers.

COSHOCTON—
West Lafayette,
New Guilford.

CRAWFORD—
Sulphur Springs,
Galion,
Bucyrus.

CUYAHOGA—
Solon,
Strongsville,
Olmstead Falls,
Mayfield.

DARKE—
Versailles,
New Madison,
Gettysburg,
Arcanum.

DEFIANCE—
Defiance,
Sherwood.

COUNTY AND TOWN.

DELAWARE—
Delaware,
Sunbury.

ERIE—
Castalia,
Milan,
Berlin Heights.

FAIRFIELD—
Amanda,
Bremen,
Baltimore.

FAYETTE—
Goodhope,
Jeffersonville.

FRANKLIN—
Hilliard,
Canal Winchester,
Pleasant Corners,
Westerville.

FULTON—
Delta,
Fayette.

GALLIA—
McCormick,
Cheshire.

GEAUGA—
Middlefield,
Thompson.

GREENE—
Cedarville,
Jamestown,
Alpha.

GUERNSEY—
Cumberland,
Quaker City,
Antrim.

HAMILTON—
Newtown,
Mt. Healthy,
Blueash,
Harrison.

COUNTY AND TOWN.

HANCOCK—
McComb,
Arcadia,
Mt. Blanchard,
Benton Ridge.

HARDIN—
Ada,
Forest.

HARRISON—
Cadiz.

HENRY—
Sharon Church,
Grelton.

HIGHLAND—
Buford,
Leesburg,
Lynchburg.

HOCKING—
Logan,
Laurelville.

HOLMES—
Holmesville.

HURON—
North Fairfield,
Wakeman,
Greenwich.

JACKSON—
Cove,
Jackson,
Camba.

JEFFERSON—
Smithfield,
Richmond,
Mt. Pleasant.

KNOX—
Democracy,
Centerburg.

LAKE—
Perry,
Painesville.

LAWRENCE—
Wilgus,
Ryansville,
Labelle.

LICKING—
Brownsville,
Croton,
Alexandria.
Utica.

LOGAN—
Degraff,
West Mansfield,

COUNTY AND TOWN.

LORAIN—
Columbia Center,
North Ridgeville,
Pittsfield,
Rochester.

LUCAS—
Waterville,
Sylvania,
Java,
Holland.

MADISON—
London,
Plain City.

MAHONING—
Canfield,
North Lima,
Berlin Center,
North Jackson.

MARION—
Caledonia,
Waldo.

MEDINA—
Malletcreek,
Hinckley.

MEIGS—
Chester,
Racine,
Dyesville.

MERCER—
Coldwater,
Wabash.

MIAMI—
Piqua,
Bethel,
Troy,
West Milton.

MONROE—
Beallsville.

MONTGOMERY—
Vandalia,
Germantown,
Brookville,
Centerville.

MORGAN—
Malta,
Chesterhill.

MORROW—
Cardington.

MUSKINGUM—
Gaysport,
Rix Mills,
Norwich,
Adamsville.

NOBLE—
Sharon,
Summerfield.

COUNTY AND TOWN.

OTTAWA—
Elmore,
Port Clinton,

PAULDING—
Haviland,
Antwerp.

PERRY—
Sayre,
Glenford,
Rehoboth.

PICKAWAY—
Ashville,
Williamsport.

PIKE—
Piketon.

PORTAGE—
Garrettsville,
Randolph.

PREBLE—
Camden,
Eaton.

PUTNAM—
Leipsic,
Continental,
Rimer.

RICHLAND—
Lucas,
Lexington,
Adario,
Butler.

ROSS—
South Salem,
Bainbridge,
Frankfort,

SANDUSKY—
Fremont,
Clyde,
Bellevue.

SCIOTO—
Haverhill,
Scioto,
Mt. Joy.

SENECA—
Republic,
Tiffin,
Fostoria,
Greenspring.

SHELBY—
Jackson Center,
Sidney.

STARK—
Alliance,
New Berlin,
Marlboro,
Justus.

COUNTY AND TOWN.

SUMMIT—
West Richfield,
Inland,
North Springfield,
Ghent,

TRUMBULL—
Hartford,
Churchill,
Newton Falls,
Mesopotamia.

TUSCARAWAS—
Sugar Creek,
Winfield,
Tuscarawas,
Midvale.

UNION—
Marysville,
Richwood.

COUNTY AND TOWN.

VAN WERT—
Venedocia,
Convoy,
Van Wert.

VINTON —
Wilkesville,

WARREN—
Waynesville,
Morrow.

WASHINGTON—
Elba,
Watertown,
Bartlett,
Lowell.

COUNTY AND TOWN.

WAYNE—
Wooster,
Creston,
Lattasburg.

WILLIAMS—
West Unity,
Bryan.

WOOD—
Bloomdale,
Tontogany,
Grand Rapids.

WYANDOT—
Upper Sandusky,
Sycamore.

We further recommend the appointment of the following named gentlemen to serve as lecturers at the various institutes to be held under the management of the State Board of Agriculture:

Allen, F. L., Kinsman, Trumbull county.
Baldwin, S. J., R. R. 19, Talmadge, Summit county.
Begg, John, R. R. 1, Columbus Grove, Putnam county.
Blackford, Frank, Eldorado, Preble county.
Brigham, J. S., Bowling Green, Wood county.
Chamberlain, W. I., Hudson, Summit county.
Cook, William M., R. R. 3, Camden, Preble county.
Derthick, F. A., R. R. 2, Mantua, Portage county.
Dobie, J. Al., Gutman, Auglaize county.
Dunlap, R. W., Kingston, Ross county.
Farnsworth, W. G., Waterville, Lucas county.
Houskeeper, G. C., Bowling Green, Wood county.
Judy, A. H., Castine, Darke county.
Laylin, T. C., R. R. 1, Norwalk, Huron county.
McIntire, Charles, Chandlersville, Muskingum county.
Miller, H. P., Sunbury, Delaware county.
Montgomery, Cary W., Box 4, Newark, Licking county.
Rathbun, Rei, Box 102, Springfield, Clark county.
Riggs, Ernest J., Raccoon Island, Gallia county.
Roudebush, Lowell, Nicholsville, Clermont county.
Scott, Geo. E., Mt. Pleasant, Jefferson county.
Shawver, John L., Bellefontaine, Logan county.
Spencer, L. G., Nutwood, Trumbull county.
Strode, S. E., Westland, Morgan county.
Thomas, M. C., Mingo, Champaign county.
Wagner, C. R., R. R. 18, Arlington, Hancock county.
Wallace, R. H., Chillicothe, Ross county.

T. E. Cromley,
Wm. Miller,
R. O. Hinsdale,
Committee.

On motion a recess was taken until 2 o'clock p. m., at which hour the Board reconvened and proceeded to the transaction of business.

A protest was presented from J. E. Wing & Brother against the award to J. E. Henderson of first premium on flock of Dorset sheep.

The protest was not sustained and the premium was ordered to be paid as awarded by the judge.

Requests by F. P. Knowles and C. W. Haines for return of entrance fees on animals entered for the fair, but not shown, were declined.

On motion of Mr. Calvert the plans and specifications for the three buildings agreed upon were approved.

On motion of Mr. Cromley the secretary was authorized to put floors in machinery buildings, coops in poultry buildings, new front to power hall, finish and paint interiors of exhibition buildings, remove old administration building, purchase old private buildings to be used for refreshment purposes, install heat and gas plant, sell old gasoline gas plant, build new and repair old fences and adopt plans for private offices in new buildings; any or all these improvements to be so far as the funds of the Board will permit.

Mr. Sandles moved that a committee of three be appointed to draft suitable resolutions on the death of Hon. J. H. Brigham and Hon. S. H. Ellis, former members of the Board.

The motion prevailed unanimously and on motion of Mr. Cromley, Mr. Sandles, President Carpenter and Secretary Miller were constituted the committee.

On motion the Board adjourned to meet at the call of the president.

DEPARTMENT OF AGRICULTURE,
COLUMBUS, October 28, 1904,
10:00 o'clock a. m.

The Board met pursuant to call, President Carpenter in the chair and all members present except Mr. Taylor.

The minutes of the preceding meeting were read and approved.

The president stated that the purpose of the meeting was to further consider the plans for buildings proposed to be erected on the State Fair grounds, and to arrange for receiving proposals for construction.

The secretary submitted the plans and specifications prepared, which, upon examination and consideration in detail, were approved and signed by the Board as required by law, whereupon Mr. Ganson submitted the following which was adopted:

Resolved, That the secretary, on approval of plans by the proper State officers, be authorized and instructed to advertise, according to law, for proposals for the buildings to be constructed on the State Fair grounds, such proposals to be opened and considered by the Board at 10 o'clock a. m., Friday, December 2, next.

On motion the Board adjourned to meet on the day agreed upon for considering the building proposals.

DEPARTMENT OF AGRICULTURE,
COLUMBUS, Decebmer 2,
10:30 o'clock p. m.

Pursuant to call the Board met with President Carpenter in the chair and all members present.

The president announced that the special purpose of the meeting was to receive and consider proposals for the erection of buildings on the State Fair Grounds, as per advertisement published.

The secretary submitted the following proposals from the bidders named:

	One Poultry Building.	One Machinery Building.	One Poultry and One Machinery Building.	Two Machinery Buildings.	One Poultry and Two Machinery Buildings.
Charles J. Close, Columbus............	$12,753 00	$19,860 00	$32,613 00	$39,720 00	$52,473 00
D. Spencer and Son, Columbus........	10,792 00	19,480 00	30,272 00	38,960 00	49,752 00
Frank P. Wolfe, Columbus...........	10,500 00	21,000 00	31,000 00	40,000 00	49,500 00

After the reading of the proposals the president gave opportunity to interested persons to be heard.

After the hearing, it was, on motion, agreed that further consideration of the proposals be postponed until 2 o'clock p. m.

The secretary reported that he had received proposals and had purchased lumber for the finishing of buildings as authorized by the Board, and also reported the progress made in removing private machine buildings preparatory to the erection of the new machinery buildings.

The secretary stated that he had represented the Board at the meeting of the American Association of Fairs and Expositions, held at Chicago, and that the dates recommended by the Association for the Ohio State Fair of 1905 were September 4, 5, 6, 7 and 8.

On motion, the dates recommended, as reported by the secretary, were agreed to.

The minutes of the preceding meeting having been passed in the regular order of business were now read and approved.

On motion a recess was taken until 1:30 p. m. at which hour the Board reconvened and proceeded to hear bidders, by attorney representation, regarding the proposals submitted for the erection of buildings on the State Fair grounds.

After the hearing of the several bidders a recess was taken until Wednesday, December 7, at 10 o'clock a. m.

On the day to which recess was taken the Board convened at 10 o'clock, a. m., with President Carpenter in the chair and all members present.

Assistant Attorney-General W. H. Miller was present and advised the Board that, on account of irregularity in advertising for bids for the construction of buildings on the State Fair grounds, which were received and opened on the 2nd instant, all bids should be rejected.

Mr. Lybarger moved to reject all bids, as advised by the Attorney-General's Department, which, on call of the roll, was agreed to by a unanimous vote of the Board.

On motion of Mr. Calvert, the Board resolved to readvertise, and the secretary was instructed by the Board to publish bids, as required by law, to be received and opened at 3 o'clock p. m., Monday, January 9, 1905.

On motion of Mr. Lybarger, the Board adjourned at 11:15 o'clock a. m., to meet at the Department of Agriculture, State House, Columbus, at 3 o'clock p. m., January 9, 1905.

DEPARTMENT OF AGRICULTURE,
COLUMBUS, January 9,
3 o'clock, p. m.

The Board met pursuant to adjournment and was called to order by President Carpenter, all members being present, except Messrs. Ganson and Sandles.

The minutes of the preceding meeting and recessed session were read and approved.

The president announced that the first business would be the receiving of proposals for the construction of buildings on the State Fair grounds, as advertised for according to law.

The following proposals were submitted:

	One Poultry Building.	One Machinery Building.	One Poultry and One Machinery Building.	Two Machinery Buildings.	One Poultry and Two Machinery Buildings.
Geo. W. Painter, Columbus	$14,753 00	$20,560 00	$35,313 00	$41,120 00	$55,873 00
D. Spencer and Son, Columbus	10,570 00	18,900 00	30,382 00	38,050 00	48,630 00
Chas. W. Schneider, Columbus	13,753 00	20,460 00	34,213 00	40,920 00	54,673 00
Chas. J. Close, Columbus	12,233 00	18.320 00	30,553 00	36,640 00	48.873 00
F. P. Wolfe, Columbus	10.500 00	19,350 00	29,850 00	38,000 00	48,500 00
F. D. Shaner, Columbus	10,456 00	....	....	....	....
The Buckeye Engineering and Construction Co., Columbus	23,526 70	24,381 00	47,907 70	48,762 00	72,288 70

The Assistant Attorney-General was called into consultation with reference to the proposals submitted. His opinion was given on the matters in question, when the Board postponed further consideration of the proposals until 2 o'clock p. m., January 10.

The secretary reported the purchase of lumber, which was being delivered on the grounds, for finishing buildings, and he also reported the purchase of brick for paving in the new buildings.

A communication was presented from W. M. Hayes, Secretary American Breeders' Association, inviting the Board to take a life membership in said association; on motion of Mr. Lybarger, the communication was ordered placed on file for future reference and consideration, if deemed advisable.

A communication from J. P. Hine, relative to combination stock sales, was ordered filed for consideration at the meeting to revise premium list for 1905.

T. L. Calvert and the secretaries were constituted a committee to revise the rules of the Board and the rules governing county agricultural societies.

The assistant secretary presented a financial statement, which was referred to the auditing committee.

On motion, a recess was taken until 2 o'clock, p. m., January 10.

2 o'clock, p. m., January 10.

The Board reassembled and proceeded to business.

The chairman of the auditing committee submitted the report of that committee which was approved and ordered to be read in the annual meeting after the reading of the treasurer's report.

The president announced that the hour had arrived for considering the proposals submitted for the erection of buildings. It was found upon comparing all the bids received, that the lowest in aggregate for the buildings required would be the bid of $36,640.00 by Mr. Charles J. Close, of Columbus, for the machinery buildings, and the bid of $10,500.00, by Mr. F. P. Wolfe, of Columbus, for one poultry building, making a total of $47,140.00.

Mr. Lybarger moved that the contract for two machinery buildings be awarded to Charles J. Close, and the contract for one poultry building be awarded to F. P. Wolfe. Motion prevailed.

Mr. Hinsdale moved that the secretary have prepared the necessary contracts according to law, and submit the same to the Attorney-General for approval. The motion was agreed to.

On motion, a recess was taken until 10 o'clock p. m., the 12th inst.

At the day and hour to which a recess was taken, the Board reassembled with a quorum present.

The secretary submitted the contracts for erection of buildings, and being in proper form, according to law, they were signed by the parties to whom the respective contracts had been awarded, and by the members of the State Board of Agriculture.

The signing of the contracts being fully completed an adjournment was taken until the close of the annual meeting.

4:30 p. m., January 12.

Pursuant to adjournment, the president convened the Board at the close of the annual meeting. Members all present, except Mr. Ganson.

The minutes of the preceding meetings were read and approved, and there being no further business for the Board of 1904 Mr. Cromley moved to adjourn and the motion prevailed.

Attest:
W. W. MILLER,
Secretary.
J. W. FLEMING,
Assistant Secretary.

Crop and Live Stock Statistics

Collated and Published by the

Ohio Department of Agriculture

The Department of Agriculture has a corps of about fourteen hundred crop correspondents representing the various townships of Ohio. These correspondents are supplied with proper blanks upon which to make reports once each month. Upon the information supplied by the township correspondents is based the monthly reports published by the department for the benefit of farmers and others interested.

The information contained in these monthly reports comes at a time to make it of practical value to the farmer in determining the disposition of his several crops and the distribution of his land to following crops. The reports are simply plain facts, as received from the correspondents, their figures being averaged for each township and county and for the State, with such conclusions in final outcome as are warranted by the estimates given.

Published herein are such of the monthly crop reports as have reference to acreage or bushels figured out in total. The collection, tabulation, computation of results, publication and distribution of the monthly crop reports involve a great deal of careful work on the part of the department, and some expense to the State, but the work is of vital importance to the agricultural interests and to the people in general and the expense involved is very slight compared to benefits derived.

Following the monthly reports herein reproduced will be found tables showing wheat and corn production from 1850 to 1904 inclusive, with range of price and average price; tables giving the number of horses, cattle, sheep and swine as returned to the Auditor of State; tables giving the agricultural statistics as returned to the Secretary of Agriculture by the County Auditors of the State, and finally comparative tables of the different crops, prepared to show the results of ten years.

OFFICIAL REPORT

OF THE

OHIO DEPARTMENT OF AGRICULTURE

ON THE

CONDITION OF WHEAT

and the Distribution of the Breeds of Live Stock,

MARCH 1, 1904.

The following report is based on returns received from the regular township crop correspondents of the department, averaged for each county and for the State.

WHEAT—Condition compared with an average	69	per cent.

DISTRIBUTION OF THE BREEDS OF SHEEP.

Merinos	8.06	"
Grade Merinos	12.61	"
Delaine Merinos	3.81	"
Grade Delaine Merinos	6.53	"
French Merinos	.58	"
Grade French Merinos	.86	"
Cotswolds	2.66	"
Grade Cotswolds	2.74	"
Oxford Downs	1.28	"
Grade Oxford Downs	2.06	"
Shropshire Downs	8.37	"
Grade Shropshire Downs	14.25	"
Hampshire Downs	.40	"
Grade Hampshire Downs	.50	"
South Downs	4.13	"
Grade South Downs	3.52	"
Lincolns	.27	"
Grade Lincolns	.34	"
Leicesters	.23	"
Grade Leicesters	.23	"
Dorset Horned	.31	"
Grade Dorset Horned	.20	"
Other pure breeds	.59	"
Grades of other pure breeds	1.16	"
Mixed Bloods	24.31	"

On the setting in of winter, owing to late seeding and lack of moisture, the wheat had not attained the usual degree of growth and vigor. In many fields there was very little appearance of the plant. The estimated condition of wheat on December 1, 1903, was 78 per cent. of an average condition. The estimated decline up to March 1st is not unexpected. The present estimate is 69 per cent.

The winter has been severely cold, but there has been a great amount of snow protection. The ground has been continuously frozen, so there has been no upheaval of the wheat roots, and if favorable weather prevails until the complete opening of spring the wheat, now well in the ground, may shoot rapidly forward and advance many points in general condition.

The frost is not yet out of the ground, and while most of the snow has disappeared, the wheat has not had time to green up, and it is therefore difficult to estimate, with any degree of correctness, the true condition of the plant. Much that now shows brown and has the appearance of being winter killed may be safe at the root, and show vigor at the proper time.

Winter conditions have been more favorable than otherwise to the protection of wheat, and the developments of the next few weeks will be awaited with considerable interest.

The distribution of the pure breeds of live stock indicate a continued and increased interest in the matter of fixed types of animals for the different purposes intended, and a great diminution of the scrub or chance breeds.

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE CONDITION OF WHEAT AND THE DISTRIBUTION OF LIVE STOCK, MARCH 1, 1904.

Counties.	Wheat	Per Cent of the Different Breeds of Sheep.											
	Conditions compared with an average.	Merinos.	Grade Merinos.	Delaine Merinos.	Grade Delaine Merinos	French Merinos.	Grade French Merinos.	Cotswolds.	Grade Cotswolds.	Oxford Downs.	Grade Oxford Downs.	Shropshire Downs.	Grade Shropshire Downs.
	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per ct
Adams	55	25	5	2	3	5	9	4	1	..	..	9	..
Allen	72	2	17	..	2	..	..	..	2	2	14	4	29
Ashland	70	4	13	10	9	..	..	5	..	..	1	16	6
Ashtabula	78	6	8	1	1	..	..	6	6	..	..	12	9
Athens	70	5	31	6	23	..	..	..	..	..	..	1	6
Auglaize	75	7	21	2	..	..	..	..	..	..	..	16	23
Belmont	49	18	29	20	12	1	..	1	2	..	..	..	4
Brown	74	..	6	..	..	..	..	11	8	..	7	8	24
Butler	64	4	..	..	..	..	..	..	3	21	3	6	3
Carroll	68	9	34	7	21	3	..	9	..	..	..	1	6
Champaign	70	2	15	1	13	3	10	..	..	..	..	4	24
Clark	61	16	12	1	2	6	6	..	3	..	..	8	17
Clermont	56	5	10	..	..	1	3	6	21	5	11	5	10
Clinton	75	17	9	6	14	..	..	2	6	1	..	9	14
Columbiana	73	5	20	3	12	1	1	1	8	..	2	1	7
Coshocton	45	9	28	9	17	1	2	..	1	..	2	3	14
Crawford	77	3	9	5	8	1	..	..	..	2	3	10	25
Cuyahoga	88	..	9	1	2	..	..	5	13	..	..	3	11
Darke	68	2	1	..	..	..	..	11	3	..	..	13	9
Defiance	87	6	5	1	1	..	..	3	..	1	..	14	47
Delaware	81	6	20	5	19	..	..	..	1	1	1	4	15
Erie	87	3	6	1	9	..	5	..	..	1	6	7	11
Fairfield	58	4	11	3	2	..	1	3	8	2	1	5	9
Fayette	67	1	6	4	2	1	1	..	1	4	4	2	15
Franklin	60	11	13	1	3	..	..	1	1	4	1	5	11
Fulton	80	2	15	1	3	..	..	..	5	2	..	5	30
Gallia	58	3	13	10	1	..	..	3	2	..	..	8	3
Geauga	72	12	13	..	..	..	..	5	6	..	..	15	20

Greene	65	5	15	5	5	5	..	8	17	..	..	3	12
Guernsey	50	12	37	13	14	..	..	..	1	..	3	3	3
Hamilton	75	..	10	..	..	..	..	..	..	..	..	10	40
Hancock	74	2	13	..	3	..	3	1	1	..	..	5	16
Hardin	80	8	9	10	8	4	7	2	..	..	..	7	18
Harrison	53	26	24	16	19	1	1	1	..	5	..	1	5
Henry	72	1	9	4	3	2	..	2	..	2	2	14	25
Highland	57	4	2	2	2	1	..	10	6	6	1	12	11
Hocking	56	44	5	10	5	..	..	4	..	..	..	9	..
Holmes	74	7	16	2	4	..	1	2	..	..	2	16	32
Huron	74	3	11	4	11	1	1	3	3	..	1	4	7
Jackson	65	3	3	..	..	..	..	3	..	..	..	15	8
Jefferson	69	25	9	1	14	..	..	2	7	..	..	2	3
Knox	71	6	10	10	29	..	..	..	1	..	2	3	12
Lake	90	43	5	..	..	..	..	..	..	..	..	5	25
Lawrence	53	3	4	..	..	..	..	4	..	..	..	45	5
Licking	65	15	26	4	8	..	..	3	5	..	..	4	6
Logan	67	5	14	5	7	..	3	5	2	1	..	13	13
Lorain	72	1	4	4	9	..	..	3	6	1	3	7	26
Lucas	83	2	4	..	..	..	..	..	..	15	1	11	24
Madison	80	9	21	..	4	..	..	..	1	..	..	18	23
Mahoning	78	22	19	7	5	..	..	2	..	..	2	..	14
Marion	75	8	6	13	9	1	5	5	2	..	..	17	17
Medina	72	1	11	6	14	..	..	2	3	4	4	10	13
Meigs	55	2	17	3	20	2	7	..	..	..	..	5	22
Mercer	68	..	..	..	..	..	..	3	9	..	..	15	25
Miami	78	2	..	..	7	..	..	7	3	..	3	3	..
Monroe	62	2	25	..	13	..	..	5	..	..	..	..	..
Montgomery	67	..	22	..	..	..	..	..	..	1	10	8	22
Morgan	50	6	26	13	18	3	1	..	..	1	..	3	2
Morrow	74	7	18	5	22	1	4	1	2	1	1	4	12
Muskingum	49	19	31	6	8	..	1	..	1	..	1	3	3
Noble	59	6	14	18	23	1	1	2	..	..	..	..	3
Ottawa	69	18	21	..	6	..	..	5	..	..	..	..	..
Paulding	80	..	12	..	3	..	..	..	..	..	3	17	22
Perry	58	9	15	13	8	..	..	..	..	..	..	1	13
Pickaway	60	6	18	..	..	..	..	3	3	..	..	17	26
Pike	57	5	6	3	3	..	..	1	3	..	..	7	6
Portage	79	2	20	1	4	..	1	2	7	2	9	2	9
Preble	66	..	..	..	..	..	..	4	6	7	28	5	16
Putnam	68	6	9	1	1	..	..	2	5	2	4	8	19
Richland	80	9	7	12	17	..	..	5	2	1	2	10	14
Ross	68	6	6	1	2	..	1	1	..	..	..	28	19
Sandusky	80	4	6	3	4	..	..	1	10	..	1	10	22
Scioto	67	23	..	..	..	..	..	5	..	..	..	..	..
Seneca	78	6	7	10	7	..	..	4	..	..	..	22	26
Shelby	80	15	..	..	..	..	..	..	10	..	..	5	40
Stark	78	2	5	..	..	..	..	5	2	5	1	5	2
Summit	78	5	4	1	1	2	..	6	7	..	10	4	11
Trumbull	84	5	13	5	6	..	..	4	6	..	..	..	1
Tuscarawas	70	5	13	8	5	1	1	..	..	1	2	11	12
Union	78	7	22	3	2	3	..	..	..	..	..	16	29

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE CONDITION OF WHEAT AND THE DISTRIBUTION OF LIVE STOCK, MARCH 1, 1904—Continued.

Counties.	Wheat.	Per Cent of the Different Breeds of Sheep.											
	Conditions compared with an average.	Merinos.	Grade Merinos.	Delaine Merinos.	Grade Delaine Merinos.	French Merinos.	Grade French Merinos.	Cotswolds.	Grade Cotswolds.	Oxford Downs.	Grade Oxford Downs.	hropshire Downs.	Grade Shropshire Downs.
	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per ct
Van Wert	74	3	5	..	..	..	..	3	5	2	5	7	28
Vinton	51	28	35	2	9	..	..	..	..	..	..	..	2
Warren	54	1	17	..	..	..	..	..	..	9	11	1	24
Washington	57	12	32	4	17	..	..	1	..	..	..	2	4
Wayne	78	6	2	1	3	..	..	5	2	..	1	18	24
Williams	88	10	5	..	..	..	..	2	2	..	5	28	13
Wood	79	6	6	..	1	..	..	17	..	2	5	24	12
Wyandot	78	4	5	6	13	..	..	..	..	..	3	19	11
Average per cent	69	8.06	12.61	3.81	6.53	.58	.86	2.66	2.74	1.28	2.06	8.37	14.25

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE CONDITION OF WHEAT AND THE DISTRIBUTION OF LIVE STOCK, MARCH 1, 1904—Continued.

Counties.	Per Cent of the Different Breeds of Sheep.												
	Hampshire Downs.	Grade Hampshire Downs.	South Downs.	Grade South Downs.	Lincolns.	Grade Lincolns.	Leicesters.	Grade Leicesters.	Dorset Horned	Grade Dorset Horned.	Other Pure Breeds.	Grades of Other Pure Breeds.	Mixed Bloods.
	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per ct
Adams	..	..	24	1	..	..	..	..	..	6	..	..	6
Allen	..	2	..	1	..	..	..	..	..	..	..	..	25
Ashland	..	3	4	..	2	2	..	..	..	..	2	..	23
Ashtabula	..	..	4	5	..	..	1	..	2	2	..	5	32
Athens	..	..	1	5	..	..	..	..	..	..	..	..	22
Auglaize	2	..	..	..	1	..	..	..	..	..	..	..	28
Belmont	..	..	1	3	..	..	..	..	1	1	..	..	7
Brown	..	..	17	3	..	..	..	..	..	..	..	3	13
Butler	1	..	21	11	..	..	..	..	1	2	1	..	15
Carroll	..	..	..	1	..	..	..	..	..	..	..	..	15
Champaign	..	..	2	2	..	..	..	..	1	..	2	..	21
Clark	..	..	..	..	..	..	2	1	..	..	..	5	21
Clermont	..	..	5	3	..	..	..	..	..	..	..	..	15
Clinton	..	..	1	4	..	..	..	..	..	..	..	4	13
Columbiana	..	..	2	4	..	..	..	1	..	..	1	..	31
Coshocton	..	..	2	2	..	..	..	..	..	..	1	..	9
Crawford	..	..	..	..	..	..	..	..	..	..	..	..	34
Cuyahoga	..	..	1	3	..	..	1	..	..	..	..	4	47
Darke	..	..	12	4	..	2	..	..	..	..	5	1	37
Defiance	..	..	1	1	..	..	..	..	..	..	..	..	20
Delaware	..	1	..	..	..	..	..	..	1	1	..	..	25
Erie	..	..	1	1	..	..	..	..	..	..	..	..	48
Fairfield	1	1	9	5	1	..	2	2	1	..	..	1	26
Fayette	9	8	1	11	8	..	..	..	..	..	..	..	22
Franklin	..	..	2	5	..	..	..	..	..	1	..	..	43
Fulton	..	..	..	..	..	3	..	..	..	..	..	..	36
Gallia	..	5	16	..	..	..	..	..	..	..	..	..	36
Geauga	..	..	8	3	..	..	2	1	..	..	..	..	15

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE CONDITION OF WHEAT AND THE DISTRIBUTION OF LIVE STOCK MARCH 1, 1904—Continued.

Counties.	Per Cent of the Different Breeds of Sheep												
	Hampshire Downs	Grade Hampshire Downs.	South Downs	Grade South Downs.	Lincolns	Grade Lincolns	Leicesters	Grade Leicesters	Dorset Horned	Grade Dorset Horned	Other Pure Breeds	Grades of Other Pure Breeds.	Mixed Bloods
	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per c.
Greene	..	..	5	5	..	..	..	..	5	..	..	..	10
Guernsey	..	..	1	2	..	..	..	..	..	..	..	..	11
Hamilton	..	..	..	..	..	..	..	..	..	..	..	..	40
Hancock	..	..	2	7	..	6	..	..	..	..	1	1	39
Hardin	..	..	..	..	..	..	..	1	1	1	1	2	16
Harrison	..	..	..	..	..	..	..	..	..	..	..	..	6
Henry	1	..	4	4	1	..	1	..	..	..	2	5	18
Highland	2	..	14	4	..	1	1	..	..	..	3	..	18
Hocking	..	..	7	..	..	..	..	..	..	..	..	..	16
Holmes	..	1	2	8	..	1	..	..	..	..	1	..	5
Huron	1	..	1	2	..	..	..	1	..	..	..	1	44
Jackson	..	..	14	15	..	..	..	..	..	..	..	..	39
Jefferson	..	..	3	7	..	..	5	..	..	..	..	..	22
Knox	..	..	2	4	..	..	..	..	..	..	..	1	20
Lake	..	..	..	6	..	..	..	..	..	..	..	..	16
Lawrence	..	..	4	2	..	..	..	..	..	..	..	13	20
Licking	..	..	5	2	..	..	..	..	..	..	..	1	19
Logan	..	..	5	2	..	1	..	..	..	..	..	..	24
Lorain	..	..	..	1	..	..	..	..	..	..	1	1	33
Lucas	..	..	6	4	..	..	..	..	..	1	..	7	25
Madison	..	..	..	4	..	..	..	..	..	..	..	1	19
Mahoning	7	2	9	2	..	..	..	..	6	..	..	..	3
Marion	..	..	..	..	..	1	..	..	..	..	..	2	14
Medina	..	..	..	..	..	..	..	..	..	1	..	2	29
Meigs	..	..	..	11	..	..	..	..	..	..	..	..	11
Mercer	..	..	..	5	..	..	..	..	..	..	..	..	43
Miami	..	3	23	..	3	..	2	..	5	..	..	..	39
Monroe	..	..	5	..	..	..	..	..	..	..	..	..	30

Montgomery	2	4	6	18	..	..	..	..	..	..	..	..	7
Morgan	..	1	1	2	..	1	..	..	..	..	2	..	20
Morrow	..	..	2	2	..	..	..	..	..	..	..	1	17
Muskingum	..	..	2	6	..	1	..	..	..	..	..	..	18
Noble	4	..	1	2	..	..	2	1	..	..	..	..	22
Ottawa	..	..	..	22	..	..	..	..	..	2	..	..	26
Paulding	..	..	..	2	..	2	..	..	..	..	..	..	39
Perry	..	..	3	..	..	..	..	..	..	..	5	..	33
Pickaway	..	..	1	..	..	..	..	..	..	..	..	2	24
Pike	..	..	16	7	4	..	..	..	..	..	..	..	39
Portage	..	..	1	1	..	..	..	..	..	..	..	8	31
Preble	..	4	5	10	..	..	..	..	..	..	..	..	15
Putnam	1	..	5	8	..	..	1	1	..	..	1	5	21
Richland	..	..	2	3	..	..	..	..	..	..	1	..	15
Ross	..	..	1	2	..	..	..	..	3	..	..	..	30
Sandusky	..	..	3	7	1	4	..	..	..	..	..	..	24
Scioto	..	..	18	..	..	..	..	..	..	..	..	..	54
Seneca	1	5	..	..	..	..	..	..	..	..	..	2	10
Shelby	..	..	15	..	..	..	..	10	..	..	..	..	5
Stark	..	..	7	2	..	..	..	..	..	..	..	..	64
Summit	..	..	3	2	..	..	..	..	..	..	..	19	24
Trumbull	..	..	..	3	2	2	..	1	..	..	5	..	48
Tuscarawas	3	..	2	1	..	..	..	..	..	..	1	1	33
Union	..	..	1	..	..	..	..	..	..	..	10	..	7
Van Wert	..	..	3	3	..	2	..	..	..	..	..	..	34
Vinton	..	..	..	2	..	..	..	..	..	..	1	..	21
Warren	..	..	9	15	..	..	..	..	..	..	..	..	13
Washington	..	..	4	2	..	..	..	..	..	..	..	..	22
Wayne	..	..	5	8	..	1	..	..	..	..	..	..	24
Williams	..	..	..	..	..	..	..	..	..	..	5	2	28
Wood	..	..	1	2	..	..	..	..	..	..	..	2	22
Wyandot	..	4	..	..	..	..	.23	.23	.31	.20	.59	1.16	24.31
Average per cent	.40	.50	4.13	3.52	.27	.34	..	..	..	..	..	..	35

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE CONDITION OF WHEAT AND THE DISTRIBUTION OF LIVE STOCK MARCH 1, 1904—Continued.

Counties.	Per cent. of the Different Breeds of Cattle.					Per cent of the different breeds of Swine.									
	Holsteins	Polled Jerseys	Other Pure Breeds	Grades	Natives	Berkshires	Poland Chinas	Chester Whites	Duroc Jerseys	Victorias	Suffolks	Yorkshires	Essex	Cheshire	Mixed or unknown
	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
Adams	2	....	3	29	7	6	66	8	5	2	....	....	....	....	13
Allen	....	....	....	82	8	2	11	3	5	....	....	1	....	....	78
Ashland	6	....	....	38	26	10	38	22	10	....	....	....	....	....	20
Ashtabula	10	....	....	39	21	14	12	23	....	1	1	2	....	....	47
Athens	1	....	1	47	11	3	36	19	3	....	....	5	7	1	27
Auglaize	1	....	....	32	24	5	22	8	12	1	1	....	....	....	51
Belmont	5	....	....	41	12	13	24	19	4	1	2	....	....	....	37
Brown	3	....	....	40	15	8	53	11	15	2	....	....	....	....	11
Butler	9	....	....	18	25	6	58	7	19	....	1	....	....	....	9
Carroll	4	....	1	44	21	8	40	29	1	....	....	....	....	....	22
Champaign	6	....	1	25	23	15	40	21	6	....	....	....	....	....	18
Clark	3	2	2	33	11	3	33	13	16	....	....	....	....	....	35
Clermont	....	....	1	57	11	2	52	12	10	....	....	....	....	....	24
Clinton	1	....	1	36	18	4	37	8	9	....	....	....	....	....	42
Columbiana	12	....	....	45	10	11	34	19	1	....	1	....	....	....	34
Coshocton	1	....	....	47	20	18	39	13	1	....	1	....	3	....	25
Crawford	4	....	4	42	26	10	32	11	8	1	1	....	....	....	37
Cuyahoga	12	....	....	26	41	6	9	22	1	1	3	1	....	1	56
Darke	3	....	2	28	22	3	33	12	16	....	....	....	....	....	36
Defiance	5	....	....	22	27	9	38	14	7	....	1	....	....	....	31
Delaware	....	....	1	42	10	6	36	21	8	1	....	1	....	....	27
Erie	11	1	....	41	28	15	27	19	1	1	....	2	....	3	32
Fairfield	6	....	1	24	16	16	48	11	9	....	....	....	....	....	16
Fayette	....	....	....	52	....	11	13	26	8	....	....	....	....	....	42
Franklin	4	....	1	23	21	10	31	17	13	....	....	1	1	....	27
Fulton	5	....	....	50	21	2	30	16	6	....	....	....	....	....	46
Gallia	....	....	....	13	45	1	40	15	4	....	....	....	....	....	40
Geauga	28	....	5	32	14	22	10	32	....	....	....	....	....	....	36
Greene	....	3	....	31	28	10	35	11	35	....	....	....	....	....	9
Guernsey	2	....	....	44	9	7	49	19	1	....	....	....	....	....	24
Hamilton	....	....	....	50	40	....	75	....	20	....	....	....	....	....	5
Hancock	4	....	1	36	13	6	47	10	6	....	....	1	....	....	30
Hardin	4	....	2	48	9	9	38	14	13	....	1	....	1	....	24

Harrison	4	....	....	39	4	8	63	15	2	....	....	....	....	....	12
Henry	3	....	....	62	3	10	42	11	11	....	....	....	....	....	36
Highland	6	1	3	23	17	9	39	11	18	....	....	....	....	....	23
Hocking	5	....	....	....	25	30	40	10	10	....	....	....	....	....	10
Holmes	5	2	....	33	30	13	26	21	13	....	....	....	....	....	24
Huron	6	....	....	30	32	5	29	13	2	....	....	2	1	....	48
Jackson	....	....	....	33	21	10	37	11	....	4	....	....	....	....	38
Jefferson	9	....	2	35	13	13	41	13	3	....	....	1	....	1	28
Knox	1	....	....	51	15	10	33	11	9	....	....	....	....	....	37
Lake	12	....	....	32	26	7	4	31	1	....	....	3	....	....	53
Lawrence	6	....	....	9	11	10	38	15	2	2	2	2	2	2	25
Licking	2	....	2	35	20	13	48	11	9	....	....	....	1	....	18
Logan	1	....	....	39	18	3	35	15	13	....	....	....	....	....	34
Lorain	9	1	....	45	24	10	13	9	3	....	1	2	....	....	62
Lucas	8	....	....	29	28	19	24	12	8	....	....	....	....	1	36
Madison	2	....	....	51	8	3	51	8	9	3	....	....	....	....	29
Mahoning	5	....	3	29	14	40	13	25	3	....	....	....	....	....	19
Marion	3	....	....	42	9	9	42	20	8	....	....	....	....	....	21
Medina	14	....	....	48	18	17	20	22	1	2	....	2	....	....	36
Meigs	4	....	....	21	39	4	35	28	2	....	1	....	....	....	30
Mercer	....	....	....	32	55	4	15	12	3	1	....	....	....	....	65
Miami	6	4	....	28	21	7	44	10	5	....	2	....	2	....	30
Monroe	10	....	5	15	38	5	48	25	2	....	....	2	....	....	18
Montgomery	6	1	....	27	16	13	40	20	17	....	....	....	....	....	10
Morgan	....	....	....	45	19	19	20	20	....	....	....	....	....	....	41
Morrow	2	....	....	56	10	4	31	21	7	....	....	1	....	....	36
Muskingum	1	1	....	43	6	19	46	13	3	....	....	....	....	....	19
Noble	3	....	1	33	29	5	32	9	2	4	....	....	....	....	48
Ottawa	1	....	....	42	47	8	22	14	1	....	....	1	....	....	54
Paulding	2	....	....	48	12	3	60	17	7	....	....	....	....	....	13
Perry	....	....	3	49	24	23	28	10	2	....	....	1	....	....	36
Pickaway	1	....	....	36	11	13	45	8	7	....	....	....	....	....	27
Pike	2	....	....	24	30	8	37	8	6	....	....	....	....	....	41
Portage	9	....	....	48	22	14	10	12	1	1	1	....	....	1	50
Preble	4	5	....	16	12	2	37	13	15	....	....	5	7	....	21
Putnam	1	....	2	33	24	8	32	10	19	....	1	2	....	1	27
Richland	6	....	2	35	12	9	27	14	8	....	1	1	....	....	37
Ross	....	....	....	33	23	8	31	1	16	....	....	....	....	....	46
Sandusky	1	....	....	58	15	5	44	10	13	....	....	1	....	....	27
Scioto	7	....	....	10	38	35	20	10	7	....	....	2	....	....	26
Seneca	2	2	1	38	10	8	48	14	11	....	....	1	....	....	24
Shelby	17	....	....	45	2	35	45	2	18	....	....	....	....	....	....
Stark	10	....	1	45	24	13	20	12	1	....	....	1	....	....	43
Summit	12	....	....	39	28	18	20	13	3	....	....	3	....	....	43
Trumbull	9	....	....	59	5	29	24	17	1	....	....	....	....	2	27
Tuscarawas	8	....	....	40	17	8	19	19	2	....	....	....	....	....	52
Union	....	....	....	10	2	10	50	20	20	....	....	....	....	....	....
Van Wert	2	....	5	34	19	26	24	11	10	....	....	....	....	....	26
Vinton	....	....	....	53	16	2	42	19	1	....	....	....	....	....	36
Warren	2	....	....	40	8	1	55	4	17	....	....	....	....	....	23
Washington	1	....	....	51	14	3	40	25	....	....	....	1	....	1	30
Wayne	11	....	....	35	13	21	29	13	4	....	....	....	....	....	33
Williams	10	....	5	10	3	15	35	20	30	....	....	....	....	....	....
Wood	3	....	1	18	41	8	35	7	6	....	....	1	....	2	41
Wyandot	3	....	2	57	1	12	46	12	8	....	....	....	....	....	22
Average per cent	4.65	.26	.74	36.68	19.15	10.62	34.76	14.78	7.64	.28	.25	.55	.25	.17	30.70

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE CONDITION OF WHEAT AND THE DISTRIBUTION OF LIVE STOCK MARCH 1, 1904—Concluded.

Counties.	No. of townships reported.	*Number of Stallions.						Per Cent of the Different Breeds of Cattle.								
		Thoroughbreds. (running horses)	Trotting stock.	French draft.	English draft.	Other pure breeds.	Unknown breeding.	Shorthorns.	Devons.	Herefords.	Polled Durhams.	Aberdeen Angus.	Red Polls.	Galloways.	Jerseys.	Guernseys.
	No.	No.	No.	No.	No.	No.	No.	Per Ct	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
Adams	6	...	1	3	...	...	2	46	...	1	...	...	1	...	11	...
Allen	3	...	3	8	1	...	2	4	...	3	...	...	1	...	2	...
Ashland	4	...	...	3	...	...	3	16	...	...	...	...	3	...	11	...
Ashtabula	15	...	18	8	18	17	8	16	...	...	1	1	...	...	12	...
Athens	8	...	2	7	1	4	8	23	1	2	1	1	1	1	10	...
Auglaize	6	3	11	10	...	3	23	21	...	1	6	3	3	4	5	...
Belmont	5	5	3	1	6	...	5	18	...	1	2	1	1	...	19	...
Brown	3	1	2	1	2	...	5	16	...	2	2	2	...	...	20	...
Butler	9	...	19	8	4	5	8	15	2	1	7	...	3	1	18	1
Carroll	8	...	13	3	4	...	4	18	...	1	...	...	2	...	9	...
Champaign	4	1	11	9	3	1	7	24	1	1	2	...	...	4	12	1
Clark	7	2	9	9	3	1	4	27	...	1	2	5	2	...	11	1
Clermont	7	...	6	6	1	2	8	11	...	...	2	1	...	...	17	...
Clinton	8	2	15	6	6	6	8	28	...	1	1	3	1	...	10	...
Columbiana	10	...	10	7	1	4	7	13	...	...	1	...	3	...	16	...
Coshocton	9	...	7	5	3	1	4	13	...	...	...	7	3	...	9	...
Crawford	11	1	11	11	12	11	19	7	...	2	2	2	3	...	7	1
Cuyahoga	8	...	7	3	...	3	6	4	...	1	...	1	1	...	14	...
Darke	12	...	13	15	9	3	28	22	1	1	4	1	1	...	14	...
Defiance	9	...	2	5	2	8	8	18	...	12	2	2	2	...	10	...
Delaware	11	...	21	30	2	9	8	14	...	2	5	3	3	...	20	...
Erie	9	...	4	2	1	...	4	4	...	...	1	1	1	...	12	...
Fairfield	8	1	10	4	6	15	4	20	...	...	4	8	3	...	19	...
Fayette	3	1	1	3	3	...	...	23	...	10	2	...	...	...	13	...
Franklin	15	2	20	16	9	4	17	15	2	2	3	2	3	...	22	2
Fulton	4	...	5	5	6	...	3	9	...	4	1	1	2	2	5	...
Gallia	7	...	1	3	2	...	2	13	1	...	7	1	4	...	16	...
Geauga	3	...	2	1	1	...	...	8	4	1	...	...	...	...	8	...
Greene	2	...	5	12	5	5	1	8	...	...	3	6	3	...	13	5
Guernsey	11	...	6	4	1	1	4	23	1	4	2	4	1	...	10	...
Hamilton	1	...	3	...	...	...	3	...	...	...	...	...	...	...	10	...
Hancock	7	1	1	8	5	6	5	29	1	1	2	...	3	1	9	...
Hardin	8	1	8	12	8	7	5	14	1	2	2	3	5	1	9	...
Harrison	8	...	5	9	4	3	2	30	...	...	6	1	...	...	15	1
Henry	4	...	2	14	8	4	2	15	...	6	2	2	...	...	7	...
Highland	9	2	9	5	3	4	20	21	1	4	3	1	...	...	20	...

Hocking	1	.....	1	.....	.....	.....	2	30	.....	.....	.....	15	5	.....	20	.....
Holmes	6	1	5	4	2	3	4	20	1	.....	1	.....	2	.....	6	.....
Huron	10	4	9	4	6	4	14	16	1	5	1	1	.....	.....	8	.....
Jackson	6	3	5	.....	1	2	4	19	.....	2	5	.....	2	9	9	.....
Jefferson	9	.....	4	4	5	6	5	26	.....	.....	1	1	.....	.....	12	1
Knox	16	.....	11	8	4	4	4	15	.....	2	3	1	2	.....	10	.....
Lake	3	.....	14	5	4	.....	10	8	.....	.....	.....	2	4	.....	17	.....
Lawrence	4	1	3	1	1	.....	8	8	1	1	4	25	3	1	31	.....
Licking	19	4	29	16	18	1	16	22	1	1	2	2	.....	.....	14	.....
Logan	7	.....	6	5	6	2	4	21	1	2	4	1	1	.....	11	1
Lorain.	12	.....	13	20	6	13	15	10	.....	2	.....	.....	.....	.....	9	.....
Lucas	5	.....	1	.....	1	3	2	11	.....	5	.....	.....	.....	.....	19	.....
Madison	3	.....	11	5	3	2	2	18	.....	1	.....	3	1	3	13	.....
Mahoning	5	.....	6	.....	4	.....	4	19	2	3	.....	1	1	2	20	1
Marion	12	2	9	16	4	1	12	28	.....	4	2	2	2	.....	8	.....
Medina	9	.....	7	1	1	4	4	9	.....	.....	.....	.....	.....	.....	10	1
Meigs	4	6	10	5	1	.....	8	8	2	4	1	.....	9	.....	12	.....
Mercer	2	.....	2	1	2	.....	2	6	.....	.....	.....	.....	.....	1	6	.....
Miami	4	.....	2	1	2	.....	1	14	.....	.....	5	1	6	.....	15	.....
Monroe	2	.....	.....	.....	.....	.....	1	25	.....	2	.....	.....	.....	.....	5	.....
Montgomery	3	.....	2	4	.....	.....	5	8	1	1	3	2	12	.....	23	.....
Morgan	8	.....	4	8	1	1	12	20	3	3	.....	.....	.....	.....	10	.....
Morrow	12	.....	19	21	2	.....	2	19	.....	1	2	1	.....	.....	9	.....
Muskingum	15	1	8	4	6	3	6	31	2	.....	2	2	2	.....	10	.....
Noble	5	2	1	2	.....	1	7	19	.....	6	1	1	.....	.....	7	.....
Ottawa	6	1	.....	.....	.....	2	.....	6	.....	.....	.....	1	.....	.....	3	.....
Paulding	6	.....	.....	5	2	1	7	15	1	1	6	.....	7	.....	8	.....
Perry	7	.....	1	4	.....	.....	6	10	2	.....	1	2	1	.....	6	.....
Pickaway	6	.....	19	8	2	.....	6	25	.....	1	2	4	3	6	11	.....
Pike	6	2	7	6	7	3	12	26	2	.....	1	.....	2	.....	13	.....
Portage	12	.....	9	6	2	.....	6	9	.....	.....	.....	1	1	.....	10	.....
Preble	5	.....	6	2	3	1	3	29	.....	.....	2	.....	5	.....	27	.....
Putnam	11	1	5	23	14	8	13	17	.....	6	4	1	2	3	7	.....
Richland	9	.....	7	6	5	3	40	20	1	4	6	2	2	.....	10	.....
Ross	6	.....	2	2	5	3	14	19	.....	1	.....	1	6	2	15	.....
Sandusky	5	1	9	4	1	8	3	17	.....	1	6	.....	.....	.....	2	.....
Scioto	3	.....	2	1	1	.....	3	10	.....	2	2	.....	.....	.....	31	.....
Seneca	8	.....	5	14	4	5	5	30	1	.....	.....	1	2	.....	13	.....
Shelby	2	.....	1	3	1	.....	2	17	2	2	5	.....	.....	.....	10	.....
Stark	5	.....	8	3	2	1	4	10	.....	1	.....	.....	.....	.....	9	.....
Summit	9	.....	1	6	1	3	3	10	.....	.....	.....	.....	.....	.....	10	1
Trumbull	8	.....	10	3	2	3	4	18	.....	.....	.....	1	.....	.....	5	3
Tuscarawas	12	.....	2	2	.....	.....	9	16	1	1	3	2	3	.....	9	.....
Union	2	.....	.....	.....	.....	.....	.....	35	.....	10	15	.....	18	.....	10	.....
Van Wert	4	2	6	11	4	7	8	21	.....	1	4	.....	4	.....	9	1
Vinton	5	.....	.....	1	.....	.....	1	14	.....	.....	.....	.....	1	.....	16	.....
Warren	6	.....	21	5	4	2	9	16	.....	.....	3	3	3	.....	25	.....
Washington	10	6	8	5	.....	1	3	17	1	1	1	3	1	.....	13	.....
Wayne	11	.....	17	10	1	.....	7	15	.....	.....	1	1	1	.....	13	.....
Williams	1	.....	.....	2	3	5	.....	50	.....	2	10	.....	.....	.....	10	.....
Wood	8	.....	10	5	3	2	12	13	.....	1	1	5	1	2	14	.....
Wyandot	6	.....	6	9	5	.....	5	15	.....	2	8	.....	1	.....	10	1
Totals	623	60	610	538	292	235	586	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average per cent.	.....	.....	.....	.....	.....	.....	.....	17.45	.48	1.69	2.23	1.73	1.99	.49	12.21	.25

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*The number of stallions as given in the table are those reported from 623 townships of the state, and does not therefore represent the approximate number of each county or for the state.

OFFICIAL REPORT

OF THE

OHIO DEPARTMENT OF AGRICULTURE

ON THE

Acreage and Condition of Crops and Losses to Live Stock

MAY 1, 1904.

The following report of the estimated area and condition of crops, and the losses of live stock during winter and spring, is based upon the returns received from the regular township crop correspondents of the department, the returns being averaged for each county and finally for the State.

WHEAT—Condition compared with an average	53 per cent.
SPRING BARLEY—Area sown compared with last year	77 per cent.
WINTER BARLEY—Conditions compared with an average	57 per cent.
BARLEY—Total area.	
Sown last fall	32 per cent.
Sown this spring	68 per cent.
RYE—Condition compared with an average	67 per cent.
OATS—Area for 1903 as returned by township assessors	1,232,633 acres.
" Area sown this year compared with 1903	101 per cent.
" Estimated area for the harvest of 1904	1,241,733 acres.
WHEAT—Damaged by Hessian fly	1 per cent.
Damaged by other insects	1 per cent.
CLOVER—Average date of seeding	March 27
Acreage sown compared with last year	91 per cent.
HORSES—Losses during winter and spring	2 per cent.
CATTLE—Losses during winter and spring	2 per cent.
SHEEP—Losses during winter and spring	3 per cent.
HOGS—Losses during winter and spring	2 per cent.
BERRIES—Prospects compared with an average	81 per cent.

During almost the entire month of April the weather was cold, and there was considerable rainfall, with some snow flurries. These unfavorable weather conditions have prevented progress in the growth of wheat, and at this time the plant shows 47 per cent. below a fair average condition, being 14 points lower than the condition reported April first. There were a few warm days during the month and some warm growing rains, after which the good effect could be seen in the fields that seemed to temporarily brighten up and to take on new life, but these conditions were not of sufficient duration to be of lasting effect, but demonstrated, however, what is needed to make a showing for the wheat crop where not killed out. There is hardly time for a fair wheat prospect per acre, even if the best conditions prevail. Many wheat fields, where the plant life is gone or very seriously injured, have been, or will be, plowed up for oats and corn, and this will probably amount to five per cent. or more of the total area seeded. The wheat area originally seeded was short of a full average, and the amount plowed up will reduce the area to such an extent that, even with a fair product per acre on that which remains for the harvest, the total product cannot result in much above one-half of a full average crop.

The weather conditions have seriously interfered with plowing, and spring crops will be late going in. Some of the plowed up wheat fields have been seeded to oats, and a great deal will be planted in corn.

The oats area of last year, as returned by township assessors, was 1,232,633 acres, which was above the average area for the past ten years. This year's area of oats, as estimated from the returns of crop correspondents, shows 101 per cent. as compared with last year. This estimate is undoubtedly too low, as many correspondents have very likely only reported upon the crop that was in, without taking into account the crop that will yet be put in late.

The losses to live stock during winter and spring show very slight, and not at all unusual. The health of animals is generally good, except that among hogs cholera still prevails in many localities.

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND CONDITION OF CROPS AND LOSSES TO LIVE STOCK, MAY 1, 1904.

Counties.	Wheat	Spring barley.	Winter barley.	Barley— Total area.		Rye.	Oats.			Wheat.		Clover.		Horses	Cattle	Sheep	Hogs	Berries
	Condition compared with an average.	Area sown compared with last year.	Condition compared with an average.	Sown last fall.	Sown this spring.	Condition compared with an average.	Area for 1903 as returned by township assessors.	Area sown this year compared with 1903.	Estimated area for the harvest of 1904.	Damage by Hessian fly.	Damage by other insects.	Average date of seeding. Days after Feb. 15.	Acreage sown compared with last year.	Losses during winter and spring.	Losses during winter and spring.	Losses during winter and spring.	Losses during winter and spring.	Prospect compared with an average.
	Per ct	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Acres.	Per ct.	Acres.	Per ct.	Per ct.	Per ct	Per ct	Per ct	Per ct	Per ct	Per ct	Per ct
Adams	59	......	50	25	75	68	4,889	82	4,009	1	1	31	86	1	1	2	4	74
Allen	41	......	30	......	......	48	9,741	97	9,449	......	......	38	93	2	1	2	4	88
Ashland	55	......	......	......	......	40	18,638	83	15,469	2	1	40	90	1	1	4	1	79
Ashtabula	44	......	......	......	......	45	23,510	94	22,099	......	......	50	85	4	3	4	2	68
Athens	59	......	......	......	......	60	1,329	94	1,249	......	......	33	101	......	......	1	......	99
Auglaize	50	39	......	27	73	57	14,902	122	18,180	2	5	50	74	3	1	4	5	67
Belmont	35	......	......	......	......	53	8,525	112	9,548	2	......	31	87	3	2	3	1	85
Brown	56	......	......	......	......	63	9,344	90	8,410	4	3	38	95	2	2	5	5	85
Butler	52	100	47	95	5	90	9,091	109	9,909	3	3	31	95	1	1	2	2	97
Carroll	54	......	......	......	......	69	14,354	85	12,201	......	......	42	90	1	1	4	1	79
Champaign	30	60	......	0	100	55	18,458	123	22,703	......	......	60	107	5	4	2	5	85
Clark	48	100	......	0	100	61	9,958	112	11,153	1	1	42	95	1	1	1	1	75
Clermont	41	......	......	......	......	58	11,779	89	10,483	......	1	44	100	2	2	1	2	90
Clinton	62	......	......	......	......	85	5,646	112	6,324	3	2	34	102	1	1	2	4	90
Columbiana	75	100	90	50	50	76	16,258	89	14,470	1	1	43	96	1	1	2	2	92
Coshocton	31	......	......	......	......	46	10,076	100	10,076	2	......	49	80	1	2	5	2	75
Crawford	55	35	39	100	0	74	24,920	84	20,933	3	3	45	96	3	2	6	5	86
Cuyahoga	61	......	......	......	......	69	16,125	90	14,510	2	1	44	97	3	3	2	3	75
Darke	25	117	20	13	87	66	20,279	142	28,796	3	1	51	91	4	3	3	5	78
Defiance	49	72	......	0	100	75	24,334	93	22,621	4	1	48	84	4	3	2	3	60
Delaware	57	......	......	......	......	66	13,593	95	12,913	1	1	45	102	1	1	3	4	80
Erie	44	35	50	0	100	66	14,143	94	13,294	2	......	44	96	2	1	4	3	73
Fairfield	64	60	50	60	40	75	5,682	100	5,682	2	1	43	91	1	......	1	3	72
Fayette	60	......	80	0	100	87	4,709	130	6,122	5	......	32	90	2	1	4	5	87
Franklin	60	85	......	......	......	74	15,563	93	14,474	1	1	46	93	1	1	2	3	78
Fulton	35	33	......	0	100	62	26,413	100	26,413	3	......	65	83	2	2	3	4	80
Gallia	57	......	......	100	0	64	3,661	97	3,551	1	2	28	85	1	1	4	1	85
Geauga	52	......	......	......	......	59	13,496	93	12,531	2	1	50	96	2	2	3	5	81
Greene	50	70	......	0	100	60	5,666	110	6,232	5	......	30	70	3	3	5	3	70
Guernsey	47	......	......	......	......	58	6,330	92	5,824	1	......	34	91	1	1	5	1	94
Hamilton	53	......	......	......	......	53	3,945	89	3,511	......	......	45	95	1	1	1	1	75
Hancock	34	70	65	25	75	49	13,518	141	19,060	......	......	43	92	1	1	5	4	75
Hardin	34	100	......	0	100	65	13,255	127	16,834	1	......	41	94	1	1	2	1	76
Harrison	43	......	......	......	......	45	6,368	98	6,241	1	2	50	89	3	2	5	2	93
Henry	30	105	......	0	100	75	22,843	110	25,127	......	......	55	103	2	2	5	2	88

Highland ...	60	80	75	60	40	63	5,363	89	4,773	2	3	22	89	2	2	2	3	76
Hocking	62	....	....	....	....	71	2,840	86	2,442	....	2	38	75	2	2	5	4	78
Holmes	62	96	90	70	30	78	18,128	85	15,409	2	4	38	100	2	2	4	2	97
Huron	45	75	60	30	70	73	28,579	100	28,579	1	....	50	93	1	2	4	4	84
Jackson	62	....	....	0	100	59	1,767	87	1,537	2	....	25	86	2	2	4	3	99
Jefferson	46	....	....	....	....	65	10,566	98	10,355	2	2	42	90	1	1	3	1	83
Knox	49	....	....	....	....	72	10,459	89	9,369	1	1	41	96	1	1	4	2	87
Lake	50	....	....	....	....	85	6,280	97	6,092	....	....	55	75	....	....	....	....	83
Lawrence ...	51	50	....	100	0	60	4,754	100	4,754	....	....	33	94	3	5	....	3	75
Licking	56	....	....	....	....	69	12,792	90	11,513	2	....	40	89	1	1	3	1	80
Logan	29	80	30	60	40	50	19,348	147	28,442	5	1	47	105	2	2	3	5	70
Lorain	71	80	70	12	88	81	22,269	82	18,161	1	....	37	84	1	1	3	1	71
Lucas	31	112	....	0	100	66	14,459	117	16,917	2	....	57	91	1	1	2	3	86
Madison	58	....	....	....	....	77	26,278	100	26,278	....	....	62	92	2	1	1	1	75
Mahoning ...	74	....	....	....	....	74	15,857	96	15,222	....	1	46	100	2	2	2	3	78
Marion	61	....	....	....	....	78	20,832	95	19,790	1	1	43	95	1	1	3	3	86
Medina	64	....	....	....	....	72	22,997	96	22,737	....	....	40	100	1	1	1	1	89
Meigs	61	100	100	50	50	60	2,603	85	2,213	1	....	31	81	2	1	4	1	89
Mercer	50	125	....	0	100	58	22,324	95	21,207	2	....	60	75	1	2	3	5	90
Miami	38	100	63	90	10	74	18,348	106	19,449	3	1	26	100	2	2	1	2	59
Monroe	73	....	....	....	....	80	8,159	88	7,180	2	4	50	78	4	....	5	2	88
Montgomery	55	20	50	100	0	90	10,335	133	13,746	5	2	37	90	3	2	5	4	67
Morgan	60	....	....	....	....	75	3,067	88	2,699	1	1	44	84	1	....	2	....	83
Morrow	58	....	....	....	....	67	17,106	93	15,909	....	1	43	92	1	1	2	1	82
Muskingum .	54	....	....	....	....	69	6,911	87	6,012	1	1	37	85	2	1	3	2	88
Noble	59	....	....	....	....	66	3,714	86	3,194	....	1	29	85	1	1	3	2	89
Ottawa	63	90	....	0	100	68	12,678	103	13,058	....	....	50	85	....	....	....	....	97
Paulding.....	45	90	....	0	100	82	28,281	105	29,695	....	....	58	92	1	3	2	2	68
Perry	59	....	....	....	....	61	2,421	96	2,324	....	....	34	93	....	1	2	....	85
Pickaway ..	50	....	....	....	....	65	2,442	128	3,126	2	1	37	93	5	4	5	5	78
Pike	64	25	25	50	50	71	4,166	85	3,541	....	....	21	89	2	2	3	2	78
Portage	68	....	....	....	....	63	20,163	96	19,356	1	....	45	95	1	1	2	1	77
Preble	48	....	....	....	....	....	8,675	148	12,839	2	....	25	100	2	2	4	3	78
Putnam	27	94	40	7	93	78	11,330	124	14,059	2	1	54	75	2	1	3	5	79
Richland	54	20	....	....	....	60	24,946	94	23,449	1	1	44	94	1	1	4	3	75
Ross	58	100	....	50	50	79	2,569	90	2,312	1	1	35	98	2	1	3	3	78
Sandusky ...	36	78	....	40	60	48	23,094	98	22,632	1	1	57	79	1	1	2	3	73
Scioto	73	....	80	100	0	75	3,675	85	3,124	....	1	45	77	2	3	2	2	83
Seneca	44	....	....	....	....	71	24,809	98	24,313	2	....	38	92	4	2	5	4	67
Shelby	60	90	....	0	100	47	25,424	103	26,188	1	....	40	80	1	1	1	2	89
Stark	68	25	....	....	....	68	31,506	90	28,355	1	1	46	95	....	1	1	1	83
Summit	63	....	....	....	....	77	19,169	91	17,443	4	....	45	92	1	1	2	....	82
Trumbull ...	73	....	....	....	....	66	20,987	97	20,357	1	....	49	93	1	1	3	2	89
Tuscarawas	55	....	....	....	....	70	18,592	117	21,753	1	....	44	95	2	2	2	2	91
Union	53	100	....	0	1	65	15,460	111	17,161	....	....	54	94	1	1	3	2	87
Van Wert ...	50	62	....	10	90	88	16,515	98	16,185	6	....	43	82	2	3	4	6	53
Vinton	60	....	....	....	....	70	1,971	82	1,616	....	2	28	83	1	1	2	....	83
Warren	54	....	....	....	....	69	10,856	97	10,530	....	....	38	95	1	1	1	1	89
Washington .	59	....	....	....	....	73	8,456	93	7,864	1	....	40	89	....	1	2	....	92
Wayne	64	90	....	0	100	72	32,982	85	28,035	1	1	40	90	1	1	2	2	82
Williams ..	55	105	....	0	100	68	26,763	90	24,087	....	....	55	90	5	6	4	3	78
Wood	23	67	....	17	83	56	40,581	120	48,697	2	1	57	92	1	2	2	2	71
Wyandot ..	64	83	55	57	43	69	16,646	92	15,314	2	....	43	108	2	3	3	4	75
Average ...	....	....	....	....	....	....	....	....	....	....	....	Mch.	....	....	....	....	....	....
Per cent ...	53	77	57	32	68	67	....	101	....	1	1	27	91	2	2	3	2	81
Totals	....	....	....	....	....	....	1,232,633	....	1,241,733	....	....	....	....	....	....	....	....	....

OFFICIAL REPORT

OF THE

OHIO DEPARTMENT OF AGRICULTURE

ON THE

AREA AND CONDITION OF WHEAT,

Corn and Potatoes, and the Condition of Other Crops

JULY 1, 1904.

The following report represents area and conditions of the crops named, as computed from returns received from the regular township crop correspondents of the department, the returns being very complete from nearly all the townships of the State.

WHEAT—Condition compared with an average..	59 per cent.
“ Acres sown last fall	1,903,057 acres.
“ Plowed up this spring.................	18 per cent.
“ Estimated area for the harvest........	1,560,521 acres.
BARLEY—Condition compared with an average..	79 per cent.
RYE—Condition compared with an average......	77 per cent.
OATS—Condition compared wih an average......	95 per cent.
CORN—Area planted in 1903..................	2,990,827 acres.
“ Area this year compared with 1903.......	99.6 per cent.
“ Total estimated area for 1904...........	2,978,472 acres.
“ Condition compared with an average....	83 per cent.
“ Damage by Cut Worm	3 per cent.
“ Damage by White Grub................	2 per cent.
CLOVER—Damage by White Grub	2 per cent.
POTATOES—Area planted in 1903..............	111,390 acres.
“ Area planted this year compared with 1903	98 per cent.
“ Estimated area for 1904...........	109,480 acres.
“ Condition compared with an average	96 per cent
TOBACCO—Acreage compared with last year....	90 per cent
TIMOTHY—Condition compared with an average	87 per cent.
PASTURES—Condition compared with an average	97 per cent.
HORSES—Condition compared with an average..	96 per cent.
COLTS—Number compared with an average......	88 per cent.
CATTLE—Condition compared with an average..	95 per cent.
CALVES—Number compared with an average....	92 per cent.
WOOL—Clip compared with last year...........	95 per cent.

The wheat area seeded last fall was below a good average area, and it now develops that of this area eighteen per cent. was plowed up this spring, leaving 1,560,521 acres for the harvest, being nearly one million acres short of an average for the past ten years. During April and May the wheat prospect looked very discouraging, and it was feared that condition would continue to decline until the outcome would be exceedingly short in total production, but when the report of June 1 was taken, a very slight improvement was shown over the previous month. In some parts of the State considerable improvement was made. During the month of June, while no great general improvement was made, most of the wheat has maintained the prospect of June 1, and a great deal has improved to such an extent as to advance the general prospect five points as compared with last month, the showing now being 59 per cent. of an average. The harvest will result in a very short crop, first, because of low area, and second, because of average low conditions, and, as stated last month, total production will be among the lowest in the past ten years. In southern Ohio the harvest is now on.

The corn area shows a good average as compared with the past ten years. The growth of corn is not uniform, owing to irregular planting. The great bulk of the crop was planted very late; consequently, except in very favorable soil, the corn has not attained great growth. It is noticed, however, that the crop has made rapid progress in the past two or three weeks, and most of it looks healthy and now has the making of strong crop, unless the season should be exceedingly short. Some of the very small corn is weedy and needs cultivation.

Potatoes are a good average in area, and the crop generally gives promise of a good yield per acre. and in total production.

The hay crop is quite uniform over the State, and production will be well up toward a good average.

Pastures are in fine condition, and stock is doing well.

REPORT ON THE AREA AND CONDITION OF WHEAT, CORN, POTATOES AND OTHER CROPS, JULY 1, 1904

Counties.	Wheat.				Barley.	Rye.	Oats.	Corn.					
	Condition compared with an average.	Area sown last fall.	Plowed up this spring.	Estimated area for the harvest.	Condition compared with an average.	Condition compared with an average.	Condition compared with an average.	Area in 1903.	Area this year compared with 1903.	Total estimated area for 1904.	Condition compared with an average.	Damage by cut worm.	Damage by white grub.
	Per cent	Acres	Per cent	Acres	Per cent	Per cent	Per cent	Acres	Per cent	Acres	Per cent	Per cent	Pr.ct
Adams	61	17,667	4	16,960	....	73	83	34,407	98	33,719	86	4	......
Allen	60	23,107	15	19,641	77	70	103	30,493	103	31,408	94	3	......
Ashland	55	25,205	1	24,953	55	67	103	24,971	86	21,475	76	2	......
Ashtabula	37	6,763	28	4,869	....	57	78	13,766	87	11,976	68	2	......
Athens	74	7,693	3	7,462	....	100	99	10,809	102	11,025	99	1	......
Auglaize	55	28,679	32	19,502	99	77	94	45,267	95	43,005	83	8	3
Belmont	41	17,295	11	14,383	....	80	99	18,642	101	18,828	83	6	5
Brown	75	18,163	3	17,618	....	78	102	44,535	98	43,644	100	2	3
Butler	72	48,677	12	42,836	42	93	103	53,766	106	56,992	99	1	......
Carroll	50	10,932	6	10,276	58	73	92	12,331	93	11,478	72	8	8
Champaign	62	31,333	43	17,860	....	90	98	62,259	106	65,996	86	3	8
Clark	50	27,806	30	19,464	85	85	94	50,414	100	50,414	86	7	2
Clermont	65	11,261	5	10,698	....	89	96	34,153	107	36,544	94	2	1
Clinton	76	32,168	12	28,308	....	93	102	57,676	105	60,560	93	4	6
Columbiana	72	18,848	1	18,550	....	83	87	16,038	95	15,236	83	2	2
Coshocton	39	19,108	21	15,095	....	57	97	21,684	95	20,600	80	10	4
Crawford	57	22,496	12	19,796	78	84	94	38,499	94	35,189	72	3	1
Cuyahoga	58	7,338	3	7,118	....	73	88	9,476	91	8,623	57	5	2
Darke	47	57,029	45	31,366	90	84	97	86,729	104	90,198	83	10	2
Defiance	52	10,731	41	6,331	89	80	96	31,048	100	31,048	82	10	1
Delaware	77	10,785	4	10,354	85	85	97	38,463	94	36,155	81	1	1
Erie	46	13,225	17	10,977	88	81	88	16,109	102	16,431	62	4	3
Fairfield	69	36,029	9	32,786	75	80	97	48,489	98	47,519	85	4	......
Fayette	83	32,790	11	29,183	....	93	112	56,540	107	60,498	105	....	2
Franklin	74	31,552	12	27,776	90	84	95	64,177	99	63,535	83	4	2
Fulton	43	9,360	32	6,356	100	83	95	36,283	105	38,097	83	3	......
Gallia	69	9,925	2	9,727	65	87	98	18,386	95	17,567	93	3	......
Greene	65	44,759	27	5,276	70	70	88	8,961	92	8,244	70	....	......
Geauga	60	5,555	5	32,674	80	90	100	55,872	103	57,548	83	5	5
Guernsey	56	11,607	8	10,678	....	62	97	16,104	100	16,104	95	3	2
Hamilton	60	15,566	10	14,009	....	60	....	18,268	95	17,355	100	....	......
Hancock	34	47,566	54	21,880	78	57	98	51,952	111	57,667	81	1	1
Hardin	44	21,634	36	13,846	70	85	111	44,910	111	49,850	91	2	......
Harrison	44	9,973	12	8,776	....	45	99	10,377	99	10,273	92	5	4
Henry	23	20,861	68	6,676	95	60	105	59,718	110	65,690	95	3	1
Highland	74	33,975	7	31,597	75	85	91	54,219	98	53,135	91	7	9

Hocking	71	9,639	6	9,061	....	82	95	13,483	100	13,483	93	4	2
Holmes	56	23,070	8	21,224	93	79	101	23,559	89	20,868	82	2	2
Huron	49	27,800	21	21,962	75	79	99	31,712	94	29,837	78	4	2
Jackson	64	6,241	......	6,241	....	83	85	10,908	102	11,126	73	3	1
Jefferson	54	11,676	1	11,559	....	79	92	10,544	96	10,122	79	9	4
Knox	60	20,419	6	19,194	70	85	104	29,338	98	28,751	83	8	4
Lake	58	2,800	9	2,548	....	79	69	6,000	91	5,460	51	2	......
Lawrence	64	2,939	10	2,645	80	83	92	14,619	102	14,911	85	6	3
Licking	63	25,498	4	24,478	....	80	98	50,294	97	48,785	84	5	1
Logan	32	25,211	53	11,849	88	69	106	49,724	104	51,713	88	8	5
Lorain	68	17,687	4	16,979	98	86	88	19,106	96	18,342	78	3	3
Lucas	23	6,718	42	3,896	99	67	85	20,572	110	22,629	74	5	......
Madison	65	13,470	32	9,160	73	70	98	77,969	100	77,969	95	....	......
Mahoning	80	13,076	3	12,684	....	83	91	13,032	90	11,729	66	7	2
Marion	73	16,983	10	15,285	88	77	99	47,038	99	46,568	90	5	1
Medina	59	20,596	1	20,390	....	75	96	21,060	99	20,849	67	1	1
Meigs	80	10,843	10	9,759	75	88	100	12,360	100	12,360	100	1	3
Mercer	40	30,921	30	21,645	....	60	110	44,848	120	53,818	80	7	......
Miami	50	40,164	27	29,299	....	75	103	54,490	100	54,490	87	2	4
Monroe	78	15,275	2	14,970	....	73	93	16,421	100	16,421	80	6	5
Montgomery	60	38,434	21	30,363	50	75	98	45,936	101	46,395	93	8	4
Morgan	74	9,060	2	8,879	....	83	96	13,294	99	13,161	84	6	3
Morrow	66	15,512	16	13,030	....	83	96	27,033	88	23,789	63	7	3
Muskingum	68	19,008	2	18,628	....	86	99	25,837	100	25,837	79	4	1
Noble	60	11,268	2	11,043	....	80	98	14,815	99	14,667	91	4	......
Ottawa	58	10,852	7	10,092	100	80	95	20,148	100	20,148	75	1	......
Paulding	58	13,549	45	7,452	100	83	88	48,962	100	48,962	80	6	3
Perry	76	13,471	......	13,471	....	75	101	15,714	95	14,928	91	1	1
Pickaway	64	59,124	4	56,759	....	88	97	71,885	102	73,323	98	9	......
Pike	79	10,140	4	9,734	....	78	93	24,098	99	23,857	84	5	1
Portage	63	16,731	4	16,062	....	76	79	14,539	84	12,263	60	4	1
Preble	58	48,340	15	41,089	....	78	101	54,333	109	59,223	91	5	5
Putnam	33	32,500	60	9,750	83	63	92	58,452	102	59,621	77	5	......
Richland	51	27,883	11	24,816	60	52	91	28,233	91	25,693	64	7	5
Ross	75	42,818	5	40,677	75	90	96	61,612	104	64,076	94	6	2
Sandusky	51	30,521	29	21,670	80	50	91	42,973	94	40,394	83	4	1
Scioto	69	11,058	5	10,505	....	68	94	21,566	89	19,194	85	6	2
Seneca	47	44,220	13	38,471	....	70	97	48,326	97	46,876	79	2	......
Shelby	67	36,877	25	27,657	42	68	96	49,718	100	49,718	97	5	3
Stark	50	38,913	13	33,854	100	70	90	30,613	86	26,327	63	2	3
Summit	55	19,598	1	19,402	....	70	79	16,451	90	14,806	68	1	1
Trumbull	71	10,363	8	9,535	80	74	82	13,314	84	11,184	73	2	......
Tuscarawas	51	23,023	10	20,721	....	77	92	19,715	98	19,321	80	3	2
Union	65	12,856	23	9,899	50	82	101	51,411	103	52,953	89	3	......
Van Wert	48	19,444	22	15,156	93	74	99	47,354	101	47,828	92	1	1
Vinton	68	4,827	2	4,730	....	88	88	8,624	96	8,279	90	3	2
Warren	65	24,978	9	22,730	....	81	102	46,839	78	36,534	93	1	2
Washington	71	18,730	4	17,981	....	68	94	18,395	93	17,659	89	4	3
Wayne	70	42,080	2	41,238	75	80	98	37,397	90	33,657	77	3	3
Williams	70	14,231	......	14,231	100	85	100	31,664	100	31,664	85	5	......
Wood	30	21,029	48	10,935	78	85	99	77,690	95	73,806	72	4	2
Wyandot	61	22,272	17	18,486	70	73	98	40,928	94	38,472	84	1	......
Average	59	....	18	....	79	77	95	....	99.6	....	83	3	2
Totals	....	1,903,057	....	1,560,521	....	....	....	2,990,827	....	2,978,472	....	....	......

REPORT ON THE AREA AND CONDITIONS OF WHEAT, CORN, POTATOES AND OTHER CROPS, JULY 1, 1904.—Concluded.

Counties.	Clover	Potatoes				Tobacco	Timothy	Pastures	Horses	Colts	Cattle	Calves	Wool
	Damage by white grub.	Area in 1903.	Area planted this year compared with 1903.	Estimated area for 1904.	Condition compared with an average.	Acreage compared with last year.	Condition compared with an average.	Condition compared with an average.	Condition compared with an average.	Number compared with an average.	Condition compared with an average.	Number compared with an average.	Clip compared with last year.
	Per cent	Acres	Per cent	Acres	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per ct
Adams	..	305	94	287	94	85	71	90	95	75	89	83	78
Allen	1	635	100	635	101	..	94	103	100	93	101	100	94
Ashland	..	967	90	870	98	..	90	98	94	76	91	93	95
Ashtabula	..	3,263	96	3,132	88	..	93	97	96	94	97	98	94
Athens	..	309	101	312	109	..	88	97	99	88	100	99	102
Auglaize	2	1,203	95	1,143	95	..	95	93	99	81	91	85	83
Belmont	4	785	91	714	93	93	94	104	98	75	95	82	96
Brown	1	404	101	408	98	105	100	101	90	95	102	103	100
Butler	1	950	97	922	98	85	96	100	77	86	98	100	95
Carroll	11	410	91	373	91	80	68	86	90	83	92	93	92
Champaign	10	392	103	404	103	80	79	95	100	74	95	98	100
Clark	..	684	92	629	93	90	89	102	89	83	91	95	91
Clermont	1	990	105	1,040	100	92	85	98	95	90	97	100	98
Clinton	1	353	102	360	96	85	88	96	94	94	99	96	93
Columbiana	2	1,603	100	1,603	101	..	92	98	99	98	100	100	95
Coshocton	2	921	98	903	96	..	72	90	91	85	73	93	99
Crawford	1	1,384	94	1,301	88	90	93	96	99	87	94	91	97
Cuyahoga	..	6,446	99	6,381	82	..	75	99	100	103	97	96	98
Darke	2	1,336	94	1,256	98	83	94	101	92	80	95	92	94
Defiance	1	841	93	782	97	80	83	94	87	89	94	93	94
Delaware	1	571	99	565	101	..	96	106	98	89	96	94	92
Erie	2	3,120	100	3,120	96	..	82	96	99	93	79	98	94
Fairfield	4	1,019	98	999	98	..	91	98	94	93	92	100	85
Fayette	..	32	110	35	120	..	97	113	90	85	90	93	77
Franklin	3	1,559	102	1,590	100	..	84	87	93	89	96	92	95
Fulton	..	988	95	939	95	..	80	80	95	100	90	95	100
Gallia	2	201	93	187	97	60	83	95	95	94	93	87	78
Geauga	4	2,620	97	2,541	93	..	95	107	97	95	98	85	82
Green	..	671	105	705	105	90	75	85	95	100	83	80	100
Guernsey	..	488	106	517	100	..	82	99	100	93	98	100	99
Hamilton	..	3,199	100	3,199	100	..	100	120	100	..	100	..	..
Hancock	1	965	104	1,004	100	..	98	109	98	93	95	98	95
Hardin	1	1,452	106	1,539	100	..	100	100	100	95	100	98	96
Harrison	1	227	99	225	100	..	86	101	95	94	97	95	98
Henry	5	809	105	849	100	..	90	98	100	93	100	98	100

Highland	8	241	96	231	94	88	61	87	82	96	90	93	85
Hocking	3	563	103	580	99	..	91	98	92	86	94	85	93
Holmes	4	728	98	713	104	..	90	101	98	100	100	96	92
Huron	5	1,282	94	1,205	95	100	93	97	91	74	95	82	96
Jackson	1	127	102	130	96	80	79	88	89	83	90	89	82
Jefferson	3	583	100	583	98	..	74	91	93	89	99	88	96
Knox	4	353	102	360	102	..	94	104	95	93	96	95	99
Lake	..	1,746	96	1,676	75	85	78	84	94	85	95	100	100
Lawrence	3	1,309	91	281	99	70	75	88	81	67	90	90	83
Licking	2	984	98	964	99	..	85	93	91	80	94	92	94
Logan	7	454	102	463	98	75	86	100	97	96	98	96	93
Lorain	5	2,396	97	2,323	91	..	94	100	97	91	100	74	92
Lucas	..	2,793	98	2,737	98	..	63	84	96	77	91	96	100
Madison	..	137	98	134	100	..	93	98	99	102	100	96	90
Mahoning	3	1,896	98	1,858	90	..	88	110	95	83	104	95	100
Marion	1	797	99	789	100	..	97	101	100	95	99	94	98
Medina	1	2,458	94	2,311	77	..	92	102	92	101	96	84	90
Meigs	8	539	100	539	103	..	110	110	100	100	100	100	100
Mercer	..	5,937	105	6,233	100	..	100	110	95	90	100	75	95
Miami	3	871	100	871	97	96	95	90	87	92	93	92	85
Monroe	13	1,261	103	1,299	100	65	75	103	90	100	98	88	100
Montgomery	1	1,152	104	1,198	98	94	90	99	96	84	98	94	94
Morgan	4	390	96	374	99	..	87	97	97	93	94	93	90
Morrow	4	1,031	98	1,010	91	..	90	98	88	78	90	92	93
Muskingum	2	854	106	905	97	..	84	95	95	88	98	96	99
Noble	1	681	98	667	101	83	92	110	88	77	95	84	97
Ottawa	..	816	100	816	95	..	87	83	100	100	100	92	93
Paulding	..	436	100	436	90	..	90	93	95	90	95	100	100
Perry	..	502	100	502	102	..	86	102	95	92	99	97	96
Pickaway	1	334	100	334	104	..	95	94	99	93	97	99	89
Pike	1	486	102	496	100	..	78	101	88	93	88	89	88
Portage	1	6,856	94	6,445	77	..	93	97	96	82	98	93	84
Preble	1	442	100	442	100	98	90	100	100	98	100	99	99
Putnam	1	847	93	788	97	100	83	98	91	87	92	89	94
Richland	4	1,286	91	1,170	86	..	70	93	91	75	90	86	97
Ross	4	794	94	746	105	70	84	87	92	90	94	89	85
Sandusky	1	2,122	93	1,973	84	..	78	86	91	79	85	75	85
Scioto	5	977	93	909	94	..	79	88	83	75	83	83	97
Seneca	..	1,438	104	1,496	92	..	86	90	92	86	97	93	99
Shelby	2	829	93	771	104	100	90	100	98	75	100	95	88
Stark	3	3,245	95	3,083	88	80	80	99	85	71	89	81	93
Summit	..	3,912	96	2,796	85	..	84	95	86	89	93	95	79
Trumbull	2	3,025	100	3,025	90	..	91	100	98	84	97	80	88
Tuscarawas	1	1,615	98	1,584	92	..	80	95	94	98	95	97	98
Union	2	256	92	236	97	..	89	95	95	94	98	93	95
Van Wert	..	942	91	857	98	..	91	102	96	87	94	98	93
Vinton	..	283	100	283	103	..	75	97	98	78	98	99	96
Warren	..	431	100	431	96	80	83	99	92	92	94	93	98
Washington	1	1,866	99	1,847	103	..	80	96	98	83	97	89	86
Wayne	1	3,595	105	3,775	90	100	95	104	93	89	99	88	87
Williams	..	803	100	803	90	..	90	100	95	105	100	105	100
Wood	3	931	97	903	99	..	79	95	98	71	97	88	98
Wyandot	2	656	96	630	95	100	92	99	97	94	98	92	97
Average	2		98		96	90	87	97	96	88	95	92	95
Totals		111,390		109,480									

OFFICIAL REPORT

OF THE

OHIO DEPARTMENT OF AGRICULTURE

ON THE

Area and Product of Wheat, Oats, Barley and Rye and the Condition of Other Crops,

OCTOBER 1, 1904.

The following report represents area as returned by the township assessors of the State, and from which the bushels are computed, on the basis of average product per acre from actual threshing done throughout the several townships and reported to the department by its regular crop correspondents. The figures thus obtained are the most reliable to be secured, and are regarded as approximately correct.

WHEAT—Area sown last fall, as returned by township assessors	1,901,773 acres.
" Estimated area plowed up this spring	18 per cent.
" Estimated area harvested	1,563,645 acres.
" Product per acre, estimated from threshers' returns	11.9 per cent.
" Total estimated product for 1904	18,693,067 bushels
" Quality compared with an average	81 per cent.
" Crop of 1903 still in producers' hands	7 per cent.
OATS—Area as returned by township assessors	1,381,998 acres.
" Product per acre estimated from threshers' returns	41.3 bushels.
" Total estimated product for 1904	57,117,200 bushels.
" Quality compared with an average	97 per cent.
BARLEY—Area of winter and spring, as returned by township assessors	35,398 acres.
" Product per acre estimated from threshers' returns	27.5 bushels.
" Total estimated product for 1904	975,192 bushels.
" Quality compared with an average	89 per cent.
RYE—Area as returned by township assessors	34,487 acres.
" Product per acre estimated from threshers' returns	14 bushels
" Total estimated product for 1904	483,023 bushels.
" Quality compared with an average	90 per cent.
CORN—Prospect compared with an average	73 per cent.
" Cut up for fodder	66 per cent.
" Average date of cutting for fodder	Sept. 20.
POTATOES—Probable total yield compared with an average	87 per cent.
TOBACCO—Condition compared with an average	90 per cent.
PASTURES—Condition compared with an average	81 per cent.
APPLES—Prospect compared with an average	51 per cent.

Of the wheat area seeded last fall, for the harvest of this year, it is estimated that 18 per cent., or 338,128 acres, were plowed up in the spring. This loss in area has made a vast difference in production, and, with the low average bushels per acre that resulted from the past harvest, the wheat crop for 1904 shows only 18,693,067 bushels. This is less than one-half of a full crop for the State, the product per acre being about four bushelss hort of a good average. The wheat area harvested was the lowest in a long series of years, and total production is the lowest, with the exception of two years, 1896 and 1900, in twenty-five years. The quality of the crop of 1904 shows 81 per cent. as compared with a good average quality. Much of the grain when harvested was light and affected with rust.

If Ohio ever again produces a crop to equal some of her heavy wheat crops, for instance, the crops of 1891, 1893, 1894 and 1899, there must be an increase in wheat area, otherwise we can not again hope to reach the forty million bushel mark.

The oats area was large, exceeding the large area of last year. This is accounted for by the fact that a great deal of the plowed up wheat was put to oats. The crop, generally, produced well, the product per acre being considerably above the average, and on the large area resulted in one of the largest crops recorded for the State. The quality of grain is generally excellent, the average showing 97 per cent. In last year's oats production, which was large, three counties of the State showed a product of above a million bushels. This year twenty-three counties show a million bushels production each, one of which reaches two millions.

Winter and spring barley had a total estimated area of 35,398 acres. This is about three thousand acres less than for last year's crop. The total production, however, is greater than last year. Quality of grain is estimated at 89 per cent. of an average.

Rye shows less area than last year, but the total product is as great. This crop varies in area from year to year more than any of the other grain crops.

Corn has matured slowly and cutting has not advanced very rapidly. Slight frost occurred during the month, but no damage was done except in some of the northern counties. The corn crop, in some parts of the State, is not yet entirely free from the danger of frost. Several days of favorable weather are required to render the crop safe. While there is excellent corn in many localities, the general average for the State indicates a little less than three-fourths of a crop.

Potatoes indicate a fairly good crop. From a great many parts of the State reports indicate that the crop has been reduced by rot. The present average prospect shows about three per cent. less than was indicated in the last report. The area of the crop is not large.

The reports on tobacco show a fairly good crop that is being housed for curing.

The apple prospect indicates about one-half of a full average production. There is very unevenness of distribution, even in close localities. The estimates on the crop run from almost failure to full crop.

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND PRODUCT OF WHEAT, OATS, BARLEY AND RYE AND THE CONDITION OF OTHER CROPS, OCTOBER 1, 1904.

Counties.	Wheat.							Oats.			
	Area sown last fall as returned by township assessors.	Estimated area plowed up this spring.	Estimated area harvested.	Product per acre estimated from threshers returns.	Total estimated product for 1904.	Quality compared with an average.	Crop of 1903 still in producers' hands.	Area returned by township assessors.	Product per acre estimated from threshers' returns.	Total estimated product for 1904.	Quality compared with an average.
	Acres	Per cent	Acres	Bushels	Bushels	Per cent	Per cent	Acres	Bushels	Bushels	Per cent
Adams	15,822	4	15,189	11.	167,079	88	20	4,703	28.5	134,036	93
Allen	23,946	15	20,354	8.	162,832	100	2	12,735	45.	573,075	100
Ashland	27,983	1	27,703	9.5	263,178	70	....	17,912	55.	985,160	95
Ashtabula	6,147	28	4,425	21.1	93,367	69	3	19,589	27.9	546,533	85
Athens	4,636	3	4,497	14.7	66,106	96	9	1,516	33.2	50,331	100
Auglaize	32,072	32	21,809	11.9	259,527	67	4	21,344	49.6	1,058,662	95
Belmont	16,069	11	14,301	13.	185,913	80	10	9,964	45.	448,380	95
Brown	15,560	3	15,093	9.5	143,383	88	5	8,917	29.	258,593	99
Butler	51,277	12	45,124	13.4	604,662	78	22	13,271	38.3	508,279	97
Carroll	12,831	6	12,061	10.8	130,259	77	15	11,759	32.6	383,343	90
Champaign	27,278	43	15,548	11.5	178,802	65	12	29,750	35.	1,041,250	105
Clark	26,228	30	18,360	10.6	194,616	60	....	15,886	47.3	751,408	97
Clermont	8,622	5	8,191	11.7	95,835	87	12	13,500	36.6	494,100	98
Clinton	32,887	12	28,940	15.2	439,888	86	5	9,730	43.6	424,228	102
Columbiana	19,252	1	19,060	11.1	211,566	79	1	18,782	31.3	587,877	95
Coshocton	20,348	21	16,071	6.3	101,247	65	4	11,655	41.	477,855	100
Crawford	26,644	12	23,447	12.6	295,432	86	12	25,899	39.7	1,028,190	101
Cuyahoga	7,949	3	7,711	12.8	98,700	91	4	14,065	36.8	517,592	98
Darke	59,789	45	32,884	9.4	309,110	58	9	40,253	48.	1,932,144	92
Defiance	16,412	41	9,683	13.4	129,752	87	11	24,316	44.	1,069,904	97
Delaware	11,518	4	11,057	12.8	141,530	75	8	12,507	40.8	510,286	103
Erie	13,288	17	10,029	12.	120,348	87	25	14,134	41.2	582,321	100
Fairfield	37,647	9	34,259	17.1	585,829	78	5	5,977	43.3	258,804	98
Fayette	28,797	11	25,629	17.5	448,507	100	5	10,658	50.	532,900	100
Franklin	29,437	12	25,904	10.7	277,173	72	6	17,443	47.5	828,543	100
Fulton	14,506	32	9,864	13.3	131,181	100	....	26,533	43.1	1,143,572	100
Gallia	9,930	2	9,731	11.4	110,923	96	7	2,379	23.6	56,144	96
Geauga	5,390	5	5,120	11.5	58,880	80	10	12,568	32.5	408,460	90
Greene	35,400	27	25,842	8.	206,736	75	....	8,871	40.	354,840	90
Guernsey	10,570	8	9,724	9.3	90,433	74	14	6,253	35.	218,855	103
Hamilton	15,802	10	14,222	12.	170,664	80	....	3,676	35.	128,660	95
Hancock	34,870	54	16,040	11.3	181,252	85	6	22,825	48.	1,095,600	98
Hardin	31,057	36	19,876	12.5	248,450	75	1	18,565	33.3	618,215	100
Harrison	7,658	12	6,739	8.4	58,208	68	4	6,869	40.	274,760	100

Henry	20,571	8	6,583	12.5	82,288	69	3	31,446	45.	1,415,070	95
Highland	31,202	7	29,018	12.8	371,430	92	7	5,608	36.3	203,570	95
Hocking	9,491	6	8,921	12.	107,052	84	8	2,683	40.	107,320	105
Holmes	24,486	8	22,527	9.6	216,259	80	....	16,958	38.9	659,666	100
Huron	28,874	21	22,810	12.2	278,282	82	20	27,261	41.	1,199,616	100
Jackson	6,451	....	6,451	12.	77,412	93	3	1,354	30.	40,620	102
Jefferson	10,561	1	10,455	10.	104,550	71	3	10,355	37.5	388,313	92
Knox	24,610	6	22,933	11.	252,263	60	20	10,995	45.6	501,372	102
Lake	3,330	9	3,030	6.	18,180	75	13	7,367	42.5	313,098	100
Lawrence	2,970	10	2,673	5.	13,365	78	2	3,671	32.	117,472	98
Licking	27,948	4	26,830	13.6	364,888	80	13	13,301	39.3	522,729	98
Logan	25,803	53	12,127	6.3	76,360	75	3	21,768	55.	1,197,240	101
Lorain	19,114	4	18,349	12.6	231,197	80	10	21,904	41.4	906,826	94
Lucas	7,896	42	4,580	10.	45,800	98	4	16,277	39.	634,803	99
Madison	12,330	32	8,384	8.	41,920	80	5	32,502	44.	1,430,088	101
Mahoning	19,299	3	18,720	12.6	235,872	85	3	15,408	36.7	565,474	93
Marion	15,107	10	13,596	13.3	181,927	80	7	22,772	50.	1,138,600	95
Medina	21,871	1	21,597	13.7	294,880	90	6	21,603	48.7	1,052,066	93
Meigs	9,209	10	8,288	12.3	101,942	85	8	1,960	26.	50,960	97
Mercer	30,125	30	21,087	10.	210,870	80	9	30,340	40.	1,213,600	92
Miami	41,617	27	30,380	6.	182,280	80	4	23,540	50.	1,177,000	98
Monroe	14,437	2	14,148	14.7	207,976	83	5	7,472	33.3	248,818	90
Montgomery	32,877	21	26,072	9.	234,648	75	2	18,147	38.3	695,030	98
Morgan	8,931	2	8,752	14.2	124,278	87	9	2,876	33.6	96,634	100
Morrow	17,027	16	14,497	15.8	229,053	75	16	15,605	43.8	683,499	98
Muskingum	18,745	2	18,370	12.9	236,883	96	11	7,438	37.6	279,639	94
Noble	9,724	2	8,557	12.6	107,818	75	10	3,482	32.5	113,165	105
Ottawa	11,692	7	10,873	18.7	203,305	100	3	15,274	40.5	618,597	105
Paulding	12,570	45	6,913	12.3	85,030	87	1	35,932	32.5	1,167,790	98
Perry	14,960	....	14,960	16.7	250,032	96	....	2,537	37.5	95,138	101
Pickaway	52,675	4	50,568	15.2	768,634	83	13	6,077	50.	303,850	99
Pike	8,361	4	8,027	15.	120,405	89	....	3,976	40.	159,040	97
Portage	17,681	4	16,974	12.6	213,872	88	3	18,143	34.5	625,934	97
Preble	44,798	15	38,078	9.1	346,510	70	2	14,824	43.7	647,809	103
Putnam	31,697	60	12,677	10.4	131,841	76	5	22,959	40.7	934,431	96
Richland	30,601	11	27,235	10.2	277,797	69	7	22,930	41.	940,130	89
Ross	38,165	5	36,257	15.	543,855	90	8	3,409	30.4	103,634	92
Sandusky	27,531	29	19,547	16.	312,752	98	....	7,668	45.	345,060	100
Scioto	10,657	5	10,124	14.4	154,786	87	17	3,916	35.3	138,235	100
Seneca	44,750	13	38,932	13.9	541,155	74	2	31,015	45.	1,395,675	95
Shelby	35,753	25	26,815	6.	160,890	70	18	30,050	39.8	1,195,990	96
Stark	40,933	13	35,612	11.4	405,977	75	2	30,000	41.4	1,242,000	101
Summit	21,624	1	21,408	11.6	248,333	74	5	17,486	45.	786,870	94
Trumbull	10,212	8	9,395	9.	84,555	79	9	18,510	30.	555,300	95
Tuscarawas	22,561	10	20,305	11.2	227,416	77	4	17,647	30.4	536,469	94
Union	16,696	23	12,834	10.5	133,757	69	11	21,291	41.3	879,318	100
Van Wert	21,161	22	16,506	10.4	171,662	71	8	24,737	42.	1,038,954	88
Vinton	3,386	2	3,318	10.7	35,503	97	....	1,152	26.3	30,298	97
Warren	26,511	9	24,125	15.1	364,288	80	12	11,860	38.5	456,610	98
Washington	17,132	4	16,447	12.9	212,165	96	1	7,420	32.	237,440	102
Wayne	41,587	2	40,855	10.3	420,807	74	5	26,870	49.	1,316,630	98
Williams	19,232	....	19,232	12.	230,784	75	1	26,494	40.	1,059,760	100
Wood	23,511	48	12,226	13.3	262,606	79	5	52,887	41.7	2,205,388	99
Wyandot	23,109	17	19,180	10.6	203,308	87	20	18,034	48.	865,632	100
Average per cent	....	18	....	11.9	....	81	7	....	41.3	....	97
Totals	1,901,773	....	1,563,645	....	18,693,067	....	....	1,381,993	....	57,117,200	....

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND PRODUCT OF WHEAT, OATS, BARLEY AND RYE, AND THE CONDITION OF OTHER CROPS OCTOBER 1st, 1904—Continued.

Counties.	Barley.				Rye.				Corn.			Potatoes	Tobacco.	Pastures	Apples
	Area of winter and spring as returned by township assessors.	Product per acre estimated from threshers' returns.	Total estimated product for 1904.	Quality compared with an average.	Area as returned by township assessors.	Product per acre estimated from threshers' returns.	Total estimated product for 1904.	Quality compared with an average.	Prospect compared with an average.	Cut up for fodder.	Date of cutting for fodder days after Sept. 1st.	Probable total yield Compared with an average.	Condition compared with an average.	Condition compared with an average.	Prospect compared with an average.
	Acres	Bushels	Bushels	Per cent	Acres	Bushels	Bushels	Per cent	Per cent	Per cent	Days	Per cent	Per cent	Per cent	Per ct
Adams	....	....	....	....	779	10.5	8,180	98	88	89	21	75	85	77	33
Allen	161	35.	5,635	90	174	10.	1,740	80	60	10	20	30	..	100	30
Ashland	32	38.	1,216	80	210	12.	2,520	85	75	50	28	120	..	80	55
Ashtabula	23	25.	575	90	689	9.5	6,546	88	22	57	23	87	..	88	94
Athens	14	24.	336	90	66	16.8	1,109	100	88	66	18	101	..	89	36
Auglaize	28	40.	1,120	90	184	30.	5,520	90	72	74	16	82	..	95	44
Belmont	13	12.	156	92	175	20.	3,500	100	90	90	25	93	80	90	68
Brown	4	20.	80	85	3,305	13.	42,965	95	80	40	23	86	93	68	35
Butler	933	28.	26,124	80	343	13.8	4,733	95	76	29	16	83	100	75	44
Carroll	....	....	....	....	38	10.	380	100	66	48	22	92	..	87	74
Champaign	126	15.	1,890	95	486	10.	4,860	83	77	60	18	98	93	97	53
Clark	126	20.	2,520	78	559	13.3	7,435	80	86	52	15	100	..	100	42
Clermont	....	....	....	....	1,687	10.4	17,545	94	77	86	19	91	90	71	28
Clinton	23	22.5	518	100	997	21.4	21,336	97	86	66	16	81	98	59	8
Columbiana	3	20.	60	79	130	15.	1,950	90	58	60	24	84	..	97	80
Coshocton	6	14.	84	90	206	8.	1,648	75	79	76	17	86	..	75	45
Crawford	55	15.	825	95	78	19.	1,482	100	71	89	20	80	..	93	46
Cuyahoga	7	20.	140	88	475	12.3	5,843	89	40	38	23	74	..	88	58
Darke	162	15.	2,430	100	286	17.3	4,948	85	72	50	20	74	86	86	31
Defiance	1,808	26.7	48,274	90	234	22.	5,148	100	78	90	19	91	..	79	67
Delaware	....	....	....	....	634	11.7	7,418	94	73	67	19	95	..	90	48
Erie	273	30.	8,190	92	148	15.1	2,235	98	58	31	26	74	..	85	71
Fairfield	....	....	....	....	425	19.2	8,160	94	88	92	21	92	100	88	33
Fayette	10	25.	250	75	420	20.	8,400	100	80	100	15	100	..	60	20
Franklin	15	24.	360	80	1,468	11.7	17,176	87	79	86	18	100	..	60	30
Fulton	1216	29.4	33,319	100	541	15.	8,115	87	60	..	25	75	..	50	..
Gallia	....	....	....	....	278	11.5	3,197	81	82	100	18	97	70	67	57
Geauga	10	15.	150	80	121	17.	2,057	85	48	15	21	83	..	90	100
Greene	6	30.	180	75	349	12.	4,188	90	75	80	15	80	80	50	10

Guernsey	10	9.8	98	100	250	6.3	1,575	78	90	97	20	96	..	80	76
Hamilton	133	18.	2,394	90	502	15.	7,530	80	68	88	19	93	..	40	20
Hancock	213	21.3	4,537	90	177	14.5	2,567	100	62	74	13	72	..	83	33
Hardin	38	30.	1,140	100	318	19.	6,042	100	77	93	14	98	..	70	33
Harrison	3	20.	60	85	16	10.	160	87	75	73	25	75	..	90	90
Henry	5,908	28.	165,424	90	871	14.	11,438	89	68	40	19	90	..	78	18
Highland	54	20.	1,080	90	741	12.5	9,263	88	82	92	17	82	92	65	10
Hocking	....	....	....	....	291	15.	4,365	92	95	98	25	100	..	97	41
Holmes	....	....	....	....	211	11.3	2,384	95	85	97	19	95	..	95	70
Huron	29	20.	580	75	60	12.	720	85	61	51	23	81	..	67	60
Jackson	....	....	....	....	167	13.	2,171	100	77	97	20	105	..	70	62
Jefferson	16	20	320	79	99	16.	1,584	70	76	83	23	82	..	82	60
Knox	....	....	....	....	535	13.9	7,447	95	93	73	22	99	100	97	64
Lake	162	21.	3,402	88	605	12.5	7,563	95	60	75	30	75	..	88	88
Lawrence	....	....	....	....	97	16.	1,552	80	73	95	25	98	93	68	55
Licking	34	24.	816	80	1,290	12.	15,480	89	89	82	11	90	..	81	67
Logan	96	16.	1,536	70	973	13.7	13,330	87	61	72	18	69	..	87	52
Lorain	51	25.	1,275	92	199	10.	2,587	87	41	14	25	79	..	83	59
Lucas	639	31.6	20,192	100	457	10.	4,570	93	85	31	22	93	..	101	44
Madison	58	24.	1,392	80	548	12.	6,576	80	76	48	13	102	..	88	48
Mahoning	....	....	....	....	220	15.	3,300	90	45	48	24	80	..	89	69
Marion	28	20.	560	100	257	14.2	3,649	72	68	47	18	85	..	83	57
Medina	64	32.	2,048	90	531	18.	9,558	100	62	70	27	85	..	96	72
Meigs	1	24.	24	98	244	12.	2,928	72	74	72	18	81	85	70	63
Mercer	1002	23.	23,046	95	196	18.	3,528	80	72	60	20	74	89	86	40
Miami	....	....	....	....	6	8.	48	60	75	50	27	78	88	70	40
Monroe	2	16.	32	85	235	14.	3,290	83	72	73	18	77	100	57	45
Montgomery	35	25.	875	80	118	14.5	1,711	95	87	83	18	87	85	75	40
Morgan	2	24.	48	80	79	20.	1,580	88	81	92	19	87	80	74	41
Morrow	....	....	....	....	304	17.5	5,320	97	98	76	24	84	..	76	57
Muskingum	6	20.	120	90	438	16.3	7,139	88	84	92	19	88	..	83	78
Noble	....	....	....	....	55	17.5	963	88	97	91	18	95	85	80	70
Ottawa	5219	32.	167,008	100	121	14.	1,694	100	80	30	20	100	..	88	40
Paulding	4,616	30.	138,480	100	594	21.	12,474	93	72	15	22	85	..	75	67
Perry	....	....	....	....	227	16.	3,632	90	96	90	17	96	..	100	64
Pickaway	15	25.	375	90	454	29.	13,166	95	91	89	13	90	..	75	24
Pike	11	18.	198	88	246	16.3	4,010	88	95	62	24	95	93	87	57
Portage	21	18.	378	85	240	17.	4,080	75	32	69	23	78	..	86	83
Preble	29	19.	551	80	274	12.	3,288	100	83	48	21	96	99	83	44
Putnam	3,300	21.	69,300	89	518	14.6	7,563	92	57	83	18	82	80	84	69
Richland	64	23.	1,472	70	302	11.	3,322	80	64	57	22	76	..	82	72
Ross	21	22.3	468	86	802	12.3	9,865	86	95	49	17	80	87	89	21
Sandusky	361	28.2	10,180	90	134	12.	1,608	86	65	98	15	100	..	75	10
Scioto	....	....	....	....	215	10.	2,150	85	77	62	24	91	90	67	70
Seneca	216	28.	6,048	88	29	10.	290	90	65	98	15	70	80	58	26
Shelby	150	16.	2,400	98	72	12.	864	80	85	40	19	80	90	68	38
Stark	21	22.	462	90	208	9.	1,872	90	65	77	23	88	100	90	58
Summit	31	23.	713	90	231	14.	3,234	88	49	42	26	78	..	76	75
Trumbull	50	20.	1,000	92	230	8.3	1,909	87	42	93	22	78	..	90	93
Tuscarawas	....	....	....	....	164	11.	1,804	76	77	82	22	83	..	82	80
Union	55	14.	770	90	763	16.7	12,742	91	81	74	20	96	..	96	59
Van Wert	3,523	25.2	88,780	85	470	15.	7,050	100	62	56	20	57	..	77	48

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND PRODUCT OF WHEAT, OATS, BARLEY AND RYE, AND THE CONDITION OF OTHER CROPS OCTOBER 1st, 1904—Concluded.

Counties.	Barley.				Rye.				Corn.			Potatoes	Tobacco.	Pastures	Apples.
	Area of winter and spring as returned by township assessors.	Product per acre estimated from threshers' returns.	Total estimated product for 1904.	Quality compared with an average.	Area as returned by township assessors.	Product per acre estimated from threshers' returns.	Total estimated product for 1904.	Quality compared with an average.	Prospect compared with an average.	Cut up for fodder.	Date of cutting for fodder days after Sept. 1st.	Probable total yield Compared with an average.	Condition compared with an average.	Condition compared with an average.	Prospect compared with an average.
	Acres	Bushels	Bushels	Per cent	Acres	Bushels	Bushels	Per cent	Per cent	Per cent	Days	Per cent	Per cent	Per cent	Per ct
Vinton	....	....	....	....	73	11.	803	100	87	100	19	92	..	100	15
Warren	191	18.	3,438	90	614	12.8	7,859	93	65	56	20	73	110	69	31
Washington	4	22.	88	90	140	10.	1,400	100	64	45	17	106	..	65	26
Wayne	22	22.	484	95	290	13.	3,770	85	60	33	29	92	100	84	81
Williams	1,309	32.5	42,543	100	263	20.	5,260	98	75	60	23	100	..	95	70
Wood	2,270	30.	68,100	90	170	17.	2,890	86	69	56	20	93	..	94	32
Wyandot	261	25.	6,525	100	122	17.8	2,172	98	72	84	18	69	..	78	56
Average per cent	....	27.5	....	89	....	14.0	....	90	73	66	Sept. 20	87	90	81	51
Totals	35,398	....	975,192	....	34,487	....	483,023	....	....	....	....	....	....	....	.....

OFFICIAL REPORT

OF THE

OHIO DEPARTMENT OF AGRICULTURE

ON THE

Area of Fall Crops, Area and Product of Potatoes, and the Condition of Other Crops

NOVEMBER 1, 1904.

The following report is deduced from returns received from the regular township crop correspondents of the department. The area of fall crops is estimated by comparison with the area seeded last year, as returned by township assessors. The area of potatoes is the estimate returned by assessors, the bushels being computed by the average produced per acre, as reported by the department correspondents.

WHEAT—Area sown last fall as returned by township assessors	1,901,773 acres.
" Sown this fall compared with last year	99+ per cent.
" Estimated area seeded for the harvest of 1905	1,859,534 acres.
" Condition compared with an average	87 per cent.
" Average date of seeding	September 26.
RYE—Area sown last fall as returned by township assessors	34,487 acres.
" Sown this fall compared with last year	87 per cent.
" Estimated area seeded for the harvest of 1905	29,163 acres.
" Condition compared with an average	88 per cent.
CORN—Prospect compared with an average	71 per cent.
BUCKWHEAT—Prospect compared with an average	80 per cent.
CLOVER SEED—Prospect compared with an average	59 per cent.
POTATOES—Area planted as estimated by township assessors	107,013 acres.
" Average product per acre	101 bushels.
" Total estimated product for 1904	10,766,707 bushels.
" Affected by rot	3 per cent.
APPLES—Product compared with an average	57 per cent.
HOGS—Condition compared with an average	93 per cent.
" Number to be fattened compared with 1903	88 per cent.
COMMERCIAL FERTILIZERS—Farmers using on wheat	55 per cent.

Wheat seeding was quite generally late, partly because of weather conditions, but most generally in the hope of avoiding damage by Hessian fly, which was expected to make its appearance this season.

The area of wheat seeded in the fall of 1903 for the harvest of 1904 was the lowest in ten years, and the great amount of this that was plowed up in the spring left the area for the harvest abnormally low. The present estimate of wheat area for the harvest of next year is based by comparison with the amount originally seeded last fall, and indicates within one per cent. of the same amount, though seventeen per cent. greater than the area that was harvested. The wheat area seeded this fall is so low that even if all remains for the harvest next year, and there is an exceptionally large average produced per acre, the total crop can not reach the amount Ohio has many times produced. The continued low wheat area is not easily accounted for.

The condition of the growing plant is thirteen per cent. below a good average condition. In most parts of the State it has been too dry for proper germination and strong growth. On many fields the plant is thin and a great deal has not yet made its appearance. There has been some re-seeding. If the winter sets in early there is danger that a great deal of wheat that has not attained strong set and sufficient growth will not be able to withstand very rigid weather. While there was much fear of the fly, very little complaint is heard concerning it.

The area of rye shows less than last year, but in this there is no great weight, as this crop varies in area from year to year more than any of the other small grain crops.

The prospect for corn indicates 71 per cent. of an average. In many parts of the State the crop is not husking out as well as was anticipated, and this has caused a slight reduction in the estimated prospect since the last report. Considerable corn was cut too green and much of it is soft and moldy. In the northern part of the State the crop was injured by the frosts that occurred in September, and while there are good and even excellent crops in many sections, the average for the State will be low.

The area of potatoes is very slightly less than the area of last year, but the product per acre is considerably greater, and the total product for the State about a million and a half bushels greater than last year. Very few counties of the State are below the average in potato production, the great majority being above the average. A few localities report rot, but the extent of damage from this source is not likely to be very great.

Hogs show an average condition of 93 per cent., and 88 per cent. compared with last year, as the number to be fattened. Hogs have been sent to early markets. Cholera is reported from several counties, but the disease does not seem to be so general as last year.

OFFICIAL REPORT OF THE OHIO DEPARMENT OF AGRICULTURE ON THE AREA OF WHEAT AND RYE, AREA AND PRODUCTION OF POTATOES AND THE CONDITION OF OTHER CROPS, NOVEMBER 1, 1904.

Counties.	Wheat.					Rye.				Corn	Buck-wheat.	Clover Seed.	Potatoes.				Apples	Hogs.		Com. Fert.
	Area sown last fall as returned by township assessors.	Sown this fall compared with last year.	Estimated area seeded for the harvest of 1905.	Condition compared with an average.	When sown days after Sept. 15th.	Area sown last fall as returned by township assessors.	Sown this fall compared with last year.	Estimated area seeded for the harvest of 1905.	Condition compared with an average.	Prospect compared with an average.	Prospect compared with an average.	Prospect compared with an average.	Area planted as estimated by township assessors.	Average product per acre.	Total estimated product for 1904.	Affected by rot.	Product compared with an average.	Condition compared with an average.	Number to be fattened compared with 1903.	Farmers using on wheat.
	Acres.	Per ct.	Per ct.	Acres.		Acres.	Per ct.	Acres.	Per ct.	Per ct	Per ct.	Per ct.	Acres.	Bus.	Bushels	Pr ct	Per ct	Per ct	Per ct	Pr ct
Adams	15,822	100	15,822	90	15	779	100	779	100	90	....	60	280	100	28,000	......	25	100	100	90
Allen	23,946	100	23,946	100	10	174	100	174	100	75	....	50	538	100	53,800	......	50	95	90	2
Ashland	27,983	100	27,938	98	5	210	50	105	90	53	....	25	980	88	86,240	5	45	88	90	88
Ashtabula ..	6,147	97	5,963	97	3	689	88	606	94	23	101	70	2,505	105	263,025	4	96	86	88	77
Athens	4,636	104	4,819	91	22	66	100	66	95	89	90	70	240	96	23,040	2	32	98	65	89
Auglaize	32,072	95	30,468	89	11	184	83	153	85	70	30	64	1,084	92	99,728	11	50	95	73	23
Belmont	16,069	95	15,266	88	8	175	102	179	85	93	....	10	1,194	175	208,950	5	93	95	70	45
Brown	15,560	98	15,249	70	22	3,305	83	2,743	68	83	....	72	382	73	27,886	5	23	100	87	72
Butler	51,277	100	51,277	85	13	343	92	315	93	76	78	73	919	104	95,576	5	51	88	88	1
Carroll	12,831	100	12,831	100	15	38	90	34	100	67	95	87	352	150	52,800	3	85	92	90	87
Champaign .	27,278	88	24,005	93	12	486	50	243	90	75	....	60	259	117	30,303	1	38	95	78	57
Clark	26,228	90	23,605	95	16	559	93	519	96	89	100	86	626	102	63,852	2	52	92	89	10
Clermont ...	8,622	100	8,622	65	18	1,687	100	1,687	75	75	....	50	738	95	70,110	1	15	88	100	45
Clinton	32,887	100	32,887	82	23	937	93	927	83	87	60	61	367	72	26,424	2	11	99	99	71
Columbiana	19,252	98	18,867	93	6	130	93	121	92	56	95	58	1,870	73	136,510	1	97	95	83	63
Coshocton ...	20,348	102	20,755	79	11	206	72	148	82	87	87	53	1,060	118	125,080	4	71	89	87	75
Crawford ...	26,644	100	26,644	94	5	78	100	78	85	62	83	68	1,435	102	146,370	2	54	78	72	53
Cuyahoga ...	7,949	101	8,029	95	6	475	102	485	96	45	....	100	6,976	75	523,200	6	53	84	93	96
Darke	59,789	85	50,821	83	11	286	76	217	69	75	....	63	1,378	117	161,226	1	27	87	82	20
Defiance	16,412	100	16,412	99	6	234	100	234	100	80	....	40	731	101	73,831	......	80	95	88	5
Delaware ...	11,518	106	12,209	96	12	634	81	514	94	63	85	56	444	135	59,940	2	40	98	82	73
Erie	13,288	100	13,288	100	7	148	98	145	100	61	98	56	3,033	84	254,772	7	59	99	88	69
Fairfield	37,647	100	37,647	87	14	425	63	268	87	100	....	52	1,157	88	101,816	1	30	92	90	79
Fayette	28,797	102	29,373	90	14	420	65	273	68	85	....	75	27	70	1,890	1	5	97	84	95
Franklin	29,437	100	29,437	91	18	1,468	82	1,204	92	86	....	79	1,918	137	262,766	2	37	97	93	35
Fulton	14,506	100	14,506	100	7	541	100	541	100	85	100	25	937	90	84,330	1	50	100	103	3
Gallia	9,930	85	8,441	58	23	278	77	214	85	80	....	83	182	119	21,658	1	52	93	93	72
Geauga	5,390	95	5,121	101	2	121	100	121	100	35	78	....	2,397	77	184,569	7	87	85	85	83
Greene	35,400	98	34,692	73	19	349	88	307	85	83	....	35	554	100	55,400	1	15	95	90	45

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE AREA OF WHEAT AND RYE, AREA AND PRODUCTION OF POTATOES AND THE CONDITION OF OTHER CROPS, NOVEMBER 1, 1904—Concluded.

Counties.	Wheat.					Rye.				Corn.	Buck-wheat.	Clover Seed.	Potatoes.				Apples	Hogs.		Com. Fert.
	Area sown last fall as returned by township assessors.	Sown this fall compared with last year.	Estimated area seeded for the harvest of 1905.	Condition compared with an average.	When sown days after Sept. 15th.	Area sown last fall as returned by township assessors.	Sown this fall compared with last year.	Estimated area seeded for the harvest of 1905.	Condition compared with an average.	Prospect compared with an average.	Prospect compared with an average.	Prospect compared with an average.	Area planted as estimated by township assessors.	Average product per acre.	Total estimated product for 1904.	Affected by rot.	Product compared with an average.	Condition compared with an ae ravge.	Number to be fattened compared with 1903.	Farmers using on wheat.
	Acres.	Per ct.	Per ct.	Acres.		Acres.	Per ct.	Acres.	Per ct.	Per ct	Per ct.	Per ct.	Acres.	Bus.	Bushels	Pr ct	Per ct	Per ct	Per ct	Pr ct
Guernsey	10,570	100	10,570	95	9	250	80	200	92	92	93	44	446	103	45,998	6	100	99	91	92
Hamilton	15,802	90	14,222	60	23	502	50	251	90	60	....	....	3,240	143	463,320	1	5	90	95	63
Hancock	34,870	98	34,173	93	12	177	92	163	93	60	....	18	966	92	88,872	1	23	100	95	2
Hardin	31,057	103	31,989	94	9	318	98	312	94	60	60	70	1,863	103	191,789	3	31	93	91	5
Harrison	7,658	101	7,735	95	6	16	100	16	90	83	91	41	209	119	24,871	2	94	92	84	72
Henry	20,571	100	20,571	88	12	817	50	409	100	68	60	35	662	91	60,242	1	30	96	91	4
Highland	31,202	96	29,954	62	16	741	56	415	61	94	....	78	210	59	12,390	4	9	85	84	75
Hocking	9,491	100	9,491	80	10	291	90	262	90	80	....	....	611	150	91,650	......	25	95	95	100
Holmes	24,486	95	23,261	98	7	211	90	190	85	75	100	63	659	82	54,038	4	70	97	83	58
Huron	28,874	101	29,163	95	7	60	63	38	95	68	85	24	1,137	86	97,782	2	72	92	85	90
Jackson	6,451	98	6,322	60	21	167	80	134	69	74	57	50	129	142	18,318	......	54	86	79	89
Jefferson	10,561	96	10,138	84	5	99	100	99	95	73	78	24	517	110	56,870	5	57	88	88	68
Knox	24,610	100	24,610	95	9	535	81	433	93	93	100	46	400	132	52,800	5	69	95	84	74
Lake	3,330	93	3,097	100	5	605	97	587	100	43	100	100	1,875	97	181,875	5	95	93	77	41
Lawrence	2,970	112	3,326	70	27	97	83	81	68	63	50	80	249	103	25,647	2	33	87	83	39
Licking	27,948	100	27,948	87	13	1,290	73	941	88	89	80	46	1,076	103	110,828	6	64	88	86	48
Logan	25,803	90	23,223	91	12	973	90	876	93	83	95	63	459	94	43,146	1	54	95	86	39
Lorain	19,114	101	19,305	97	7	199	90	179	98	50	66	48	2,170	83	180,110	10	74	89	80	73
Lucas	7,896	94	7,422	96	5	457	91	416	98	73	94	15	3,258	155	504,990	6	55	98	94	7
Madison	12,330	99	11,097	75	23	548	100	548	75	83	....	80	146	70	10,220	......	43	93	88	5
Mahoning	19,299	97	18,720	94	4	220	84	185	94	17	100	38	2,500	69	172,500	3	86	95	89	87
Marion	15,107	100	15,107	87	7	257	83	213	95	67	75	62	670	90	60,300	1	51	87	90	87
Medina	21,871	100	21,871	95	6	531	90	478	89	60	....	49	2,870	89	255,430	3	73	91	81	86
Meigs	9,209	101	10,001	58	19	244	99	242	79	64	95	50	492	65	31,980	2	63	95	100	95
Mercer	30,125	102	30,728	80	7	196	100	196	92	50	....	20	846	80	67,680	......	60	100	75	50
Miami	41,616	96	39,951	75	14	6	90	5	65	73	....	80	712	122	86,664	1	43	100	95	19
Monroe	14,437	95	13,715	82	4	235	75	176	88	75	83	49	1,261	113	142,493	2	53	87	67	73
Montgomery	32,877	95	31,233	92	8	118	85	100	95	72	....	73	1,284	88	112,992	8	28	95	80	68
Morgan	8,931	100	8,931	86	17	79	88	70	100	81	55	51	380	107	40,660	2	43	87	87	69

Morrow	17,027	100	17,027	99	4	304	100	304	98	69	....	48	840	94	78,960	2	64	93	94	88
Muskingum	18,745	101	18,932	91	16	438	67	293	88	88	....	45	840	143	120,120	1	66	93	82	83
Noble	9,724	97	9,432	82	16	55	90	51	75	93	70	72	637	133	84,721	3	60	97	93	52
Ottawa	11,692	99	11,575	95	10	121	100	121	98	67	80	63	737	117	86,229	2	23	100	105	......
Paulding	12,570	112	14,078	100	7	594	100	594	97	67	70	22	412	88	36,256	2	48	100	97	......
Perry	14,960	102	15,259	98	13	227	90	204	100	100	100	50	469	90	42,210	2	65	100	96	96
Pickaway ...	52,675	100	52,675	85	18	454	86	380	79	84	....	56	359	105	37,685	1	16	81	84	56
Pike	8,361	98	8,194	67	15	246	90	221	25	88	83	77	563	127	71,501	4	48	100	100	57
Portage	17,681	99	17,394	84	5	240	83	199	97	33	55	63	7,352	89	654,328	5	89	90	87	86
Preble	44,798	101	45,246	85	16	274	100	274	95	79	....	62	367	108	39,636	......	35	93	92	86
Putnam	31,697	98	31,063	83	17	518	45	233	70	48	65	28	858	65	55,770	3	68	70	78	......
Richland	30,601	98	29,989	93	4	302	100	302	90	60	58	25	1,394	95	132,430	6	61	87	88	68
Ross	38,165	97	37,021	69	17	802	71	569	70	92	95	57	703	101	71,003	2	27	88	87	41
Sandusky ...	27,531	100	27,531	102	6	134	50	67	100	70	85	65	1,993	85	169,405	5	35	100	100	45
Scioto	10,657	96	10,231	67	17	215	75	161	68	83	85	61	983	106	104,198	3	61	93	88	60
Seneca	44,750	96	42,960	90	6	29	100	29	100	72	....	50	1,439	89	128,071	2	55	88	85	83
Shelby	35,753	99	35,395	84	9	72	100	7 2	78	83	100	81	778	100	77,800	......	60	100	87	82
Stark	40,933	97	38,705	79	3	208	92	191	84	50	68	33	3,273	107	350 211	5	67	84	78	54
Summit	21,624	100	21,624	86	7	231	75	173	78	42	69	27	3,191	98	312,718	4	73	76	80	63
Trumbull ...	10,212	103	10,518	95	2	230	98	225	94	37	86	55	3,097	87	269,439	3	99	93	89	94
Tuscarawas	22,561	100	22,561	94	5	164	70	115	90	74	70	31	1,539	106	163,134	4	90	91	86	34
Union	16,696	100	16,696	92	16	763	102	778	100	91	80	71	181	92	16,652	2	62	96	93	19
Van Wert ..	21,161	93	19,680	95	7	470	100	470	100	70	83	47	624	118	73,632	2	30	97	100	2
Vinton	3,386	103	3,488	62	21	73	88	64	70	87	100	87	246	117	28,782	1	82	99	94	97
Warren	26,511	94	25,020	78	16	614	102	626	97	69	80	46	385	108	41,580	1	25	95	89	52
Washington	17,132	101	17,303	72	18	140	75	105	83	63	60	25	1,495	89	133,055	2	28	95	94	90
Wayne	41,587	96	39,944	88	6	290	80	232	90	43	85	48	4,162	122	507,764	2	84	94	89	69
Williams	19,232	100	19,232	100	7	263	100	263	95	55	....	....	722	150	108,300	......	50	100	100	1
Wood	23,511	94	22,100	98	7	170	68	116	100	64	58	33	915	121	110,715	2	25	96	92	4
Wyandot ...	23,109	98	22,647	94	12	122	95	116	98	72	....	63	599	85	50,915	......	58	88	88	27
Average .	....	99+	....	87	Sept.	....	87	......	88	71	80	59	....	101	....	3	57	93	88	55
Totals ...	1,901,773	....	1,859,534	....	26	34,487	....	29,163	....	....	....	....	107,013	....	10,766,707	......	......	......	......	......

OFFICIAL REPORT

OF THE

OHIO DEPARTMENT OF AGRICULTURE

ON THE

Acreage and Product of Corn and the Condition of Other Crops,

DECEMBER 1, 1904.

The following report presents a careful estimate of corn production for the present year, and the condition of other crops, based upon the returns received from the regular township correspondents of the Department. In figuring the corn production, the area considered is that returned by township assessors of the State.

WHEAT—Condition compared with an average	75 per cent.
" Amount of crop of 1904 sold as soon as threshed	42 per cent.
" Damage to growing crop by Hessian fly	3 per cent.
" Damage to growing crop by white grub	1 per cent.
CORN—Area planted in 1904 as returned by township assessors	2,983,488 acres.
" Average yield per acre	30.8 bushels.
" Total estimated product for 1904	91,993,448 bushels.
" Put into silo	3 per cent.
" Average date cribbing began	Oct. 21.
CLOVER—Area sown in 1903 cut for seed	26 per cent.
" Average yield per acre	1.35 bushels.
APPLES—Probable total yield compared with an average	56 per cent.
TOBACCO—Probable average product per acre	815 pounds.
CATTLE—Number being fed for spring market compared with last year	69 per cent.
SHEEP—Number being fed for mutton compared with last year	75 per cent.

The corn area this year was a good average in amount as compared with a number of years past, but the product per acre is below an average, and considerably lower than Ohio is able to produce under more favorable conditions; however, the total product for the State, nearly ninety-two millions of bushels, is a remarkably good showing, considering that many counties produced very lightly, but it occurs that where production is lightest it is in counties having smallest area, while the counties having large corn area show good and even excellent production, and this accounts for the good results on the whole. Some of the abnormally large crops for this State have exceeded one hundred and ten million bushels, but many more have been less than this year's crop, so that on corn production there is no good reason to complain.

The condition of wheat is far from satisfactory or encouraging. The extreme and long continued drouth has prevented growth, and the plant is now, very generally, weak and thin on the ground, and very far from being in proper condition for going into winter. While there are some fairly bright and healthy looking fields, a great many are still bare, and some with no prospect of life. The plant has gone back twelve per cent. since the report of November 1st, and fly is now reported in nearly every county of the State. In some counties the damage from fly is estimated as high as ten per cent., but in the great majority of counties the damage is estimated at less than five per cent. The average for the State is three per cent.

The present prospect for the wheat harvest of 1905 is quite discouraging, and, should the winter be severe, there will very likely be another reduction of wheat area by plowing up in the spring.

With regard to other crops referred to in the report, there is nothing particular to note.

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND PRODUCT OF CORN, AND THE CONDITION OF OTHER CROPS, DECEMBER 1, 1904.

Counties.	Wheat.				Corn.					Clover.		Apples.	Tobacco.	Cattle.	Sheep.
	Condition compared with an average.	Amount of crop of 1904 sold as soon as threshed.	Damage to growing crop by Hessian fly.	Damage to growing crop by white grub.	Area planted in 1904 as returned by township assessors.	Average yield per acre.	Total estimated product for 1904.	Put into silo.	Date cribbing began, days after October 1st.	Area sown in 1903 cut for seed.	Average yield per acre.	Probable total yield compared with an average.	Probable average product per acre.	Number being fed for spring market compared with last year.	Number being fed for mutton compared with last year.
	Per cent.	Per cent.	Per cent.	Per cent.	Acres.	Bushels	Bushels	Per cent	Days	Per cent	Bushels	Per cent	Pounds	Per cent	Per cent
Adams	66	58	1	....	34,841	23.8	829,216	1	25	42	1.83	42	825	48	65
Allen	75	33	4	3	31,496	23.3	733,857	....	21	22	1.13	48	....	40	69
Ashland	60	10	5	5	23,250	23.5	546,375	....	23	5	1.50	73	....	22	38
Ashtabula	90	21	4	1	12,895	11.6	149,582	26	29	4	1.83	97	....	57	58
Athens	71	33	3	1	8,633	38.0	328,054	1	26	6	1.25	30	....	8	81
Auglaize	78	50	2	....	46,531	30.0	1,395,930	....	14	53	1.25	58	....	65	80
Belmont	75	33	4	3	19,099	35.0	668,465	1	23	1	1.00	88	800	100	100
Brown	53	23	2	1	44,364	20.0	887,280	2	28	10	2.00	30	800	78	85
Butler	71	42	3	1	56,268	37.6	2,115,677	....	33	11	1.35	38	....	74	83
Carroll	79	23	10	3	10,712	25.3	271,014	2	27	8	1.13	79	....	57	86
Champaign	40	60	5	....	60,512	30.0	1,815,360	2	20	25	1.00	90	....	50	90
Clark	73	29	3	1	51,177	45.0	2,302,965	3	20	44	1.50	60	....	88	100
Clermont	71	35	3	2	33,374	21.3	710,866	3	29	18	1.25	8	633	88	81
Clinton	76	64	2	1	59,435	35.8	2,127,773	2	20	24	1.50	4	....	87	97
Columbiana	81	13	4	1	16,105	23.3	375,247	3	23	3	1.17	100	....	66	68
Coshocton	80	19	4	1	23,058	34.0	783,972	....	14	36	1.32	77	....	56	76
Crawford	79	41	8	1	35,556	25.5	906,933	12	19	32	1.17	56	....	71	64
Cuyahoga	81	23	....	....	9,609	18.0	172,962	7	52	60	1.00	62	....	77	100
Darke	70	73	7	2	89,916	34.2	3,075,127	1	19	56	.88	29	860	65	80
Defiance	91	42	....	2	30,426	36.7	1,116,634	....	19	26	1.25	82	....	99	98
Delaware	79	49	1	....	35,008	26.6	931,213	8	19	29	1.44	51	....	72	83
Erie	89	68	2	....	14,969	31.0	462,179	1	23	33	1.04	53	....	83	78
Fairfield	75	46	3	1	49,463	39.2	1,938,950	1	16	30	1.42	23	....	65	55
Fayette	75	60	....	....	55,373	25.0	1,384,325	....	17	75	.50	5	....	60	50
Franklin	78	55	3	....	59,460	36.9	2,194,074	1	18	30	1.32	28	....	71	60
Fulton	75	50	....	....	32,831	30.0	984,930	5	15	5	....	90	....	50	50
Gallia	50	37	....	3	16,962	27.0	457,974	....	15	15	1.50	45	....	59	90
Geauga	93	25	3	....	8,262	7.5	61,965	35	18	....	....	100	....	40	70
Greene	73	40	5	....	55,848	35.0	1,954,680	8	13	30	1.50	15	400	80	88
Guernsey	88	23	1	....	15,272	31.8	485,650	2	16	10	1.12	96	....	88	100
Hamilton	68	78	....	....	17,604	30.0	528,120	3	15	....	....	8	....	60	60
Hancock	78	41	1	....	53,502	29.5	1,578,309	....	19	25	.69	24	....	70	86
Hardin	83	47	3	....	47,456	22.5	1,067,760	1	8	64	2.00	32	....	49	59

Harrison	90	21	4	1	9,14[illegible]	31.0	283,433	1	24	7	1.56	101	......	96	96
Henry	83	44	1	2	56,03[illegible]	21.4	1,199,063	6	23	41	1.06	65	......	73	79
Highland	56	37	5	3	53,799	33.6	1,807,646	1	27	51	1.82	9	960	31	59
Hocking	73	30	1	......	12,093	27.5	332,558	......	20	10	2.00	15	......	75	55
Holmes	57	27	5	1	21,107	26.0	548,782	......	16	31	1.67	63	......	92	75
Huron	74	45	6	......	28,175	29.2	822,810	2	16	41	1.25	70	......	50	55
Jackson	50	33	10	......	11,158	30.0	334,740	......	4	......	......	45	......	......	......
Jefferson	73	39	8	3	10,097	34.0	343,298	2	23	8	1.00	61	......	45	80
Knox	79	30	9	1	29,856	31.9	952,406	......	20	16	.96	70	......	62	93
Lake	97	13	1	......	5,990	16.5	98,835	10	28	6	1.50	102	......	88	83
Lawrence	42	75	3	......	14,044	27.0	381,188	7	27	25	2.00	50	......	62	43
Licking	73	51	4	3	45,231	31.9	1,442,869	......	19	14	1.13	59	......	69	76
Logan	73	69	2	1	51,356	31.0	1,592,036	2	21	43	1.17	48	......	66	86
Lorain	83	36	1	......	19,580	24.8	485,584	2	22	17	1.60	82	......	48	48
Lucas	95	61	......	......	22,161	32.6	722,449	8	21	8	1.92	66	......	75	63
Madison	60	83	3	......	65,578	32.5	2,131,285	3	6	45	1.00	30	......	75	63
Mahoning	77	26	4	2	13,372	15.0	200,580	9	22	10	3.00	77	......	35	33
Marion	76	51	4	......	44,608	34.3	1,530,054	......	22	39	1.71	52	......	68	84
Medina	80	38	1	......	19,737	20.8	410,530	4	26	4	1.50	68	......	64	68
Meigs	57	38	......	......	11,211	32.7	366,600	......	15	5	2.50	83	......	103	97
Mercer	69	61	4	1	49,237	31.7	1,560,813	......	20	46	1.04	37	......	70	80
Miami	60	68	2	......	53,544	30.0	1,606,320	1	18	33	1.13	38	850	95	100
Monroe	73	38	5	3	16,900	32.5	549,250	......	15	13	2.50	75	1,500	10	18
Montgomery	75	54	3	3	46,160	36.3	1,675,608	3	15	21	1.50	38	775	68	65
Morgan	78	33	3	......	13,455	30.0	403,650	......	21	6	1.58	47	700	66	69
Morrow	86	46	4	......	25,556	26.1	667,012	......	16	24	.93	57	......	79	84
Muskingum	74	30	3	1	24,974	37.1	926,535	2	17	10	1.00	57	......	74	67
Noble	78	28	6	1	14,246	30.4	433,078	......	15	8	.75	64	......	77	88
Ottawa	90	75	......	......	21,686	40.0	867,440	......	31	......	......	40	......	100	100
Paulding	88	33	......	......	49,548	33.3	1,649,948	......	22	23	1.33	70	......	100	100
Perry	88	25	8	......	15,065	33.3	501,665	......	15	25	1.25	53	......	77	67
Pickaway	80	64	......	......	70,965	42.0	2,980,530	1	23	59	1.40	17	......	77	93
Pike	68	33	3	1	24,151	36.7	886,342	......	20	43	1.92	47	......	87	25
Portage	83	27	2	......	13,525	11.7	158,243	18	25	13	2.50	103	......	65	70
Preble	78	53	3	......	103,667	32.5	3,369,178	......	26	38	.50	48	738	98	100
Putnam	76	28	3	4	61,486	26.6	1,635,527	......	22	20	1.30	76	......	67	78
Richland	79	32	7	5	26,556	36.6	982,893	......	15	19	.75	70	......	52	78
Ross	67	53	2	......	60,201	40.0	2,408,040	5	17	64	1.90	24	1,000	63	69
Sandusky	78	40	3	......	42,823	30.0	1,284,690	......	31	3	.60	10	......	75	100
Scioto	66	48	3	1	21,558	41.3	890,345	......	29	29	1.83	74	900	59	93
Seneca	80	48	1	......	46,971	26.6	1,249,429	4	19	42	.90	33	......	60	64
Shelby	57	71	2	......	48,017	30.6	1,469,320	......	22	50	1.20	18	600	80	75
Stark	67	38	10	1	28,840	23.3	671,972	......	13	3	1.00	58	850	65	68
Summit	83	30	8	3	16,080	13.0	209,040	20	22	3	.75	63	......	32	63
Trumbull	91	32	2	2	12,813	10.0	128,130	19	31	18	1.75	96	......	83	75
Tuscarawas	82	31	7	2	18,484	27.1	500,916	1	21	9	1.10	86	......	59	68
Union	83	55	3	1	48,162	38.0	1,830,156	3	27	50	.94	58	......	65	81
Van Wert	70	49	4	......	49,053	31.8	1,559,885	......	23	26	.81	41	......	69	74
Vinton	52	29	3	......	7,660	24.8	189,968	......	18	75	......	34	......	87	90
Warren	66	58	2	......	46,374	37.0	1,715,838	4	20	13	1.88	35	675	94	98
Washington	66	26	2	1	18,217	27.6	502,789	......	20	13	1.50	23	......	65	75
Wayne	72	20	9	2	34,546	24.3	839,468	2	23	43	.85	58	......	54	68
Williams	83	46	......	1	31,309	30.0	939,270	12	21	65	.82	90	......	74	74
Wood	89	54	1	......	79,395	28.8	2,286,576	......	27	24	1.06	28	......	76	90
Wyandot	81	43	2	......	38,421	29.5	1,133,420	......	26	55	1.25	46	......	70	73
Average	75	42	3	1	......	30.8	......	3	Oct. 21	26	1.35	56	815	69	75
Totals	......	......	......	......	2,983,488	......	91,993,448	......	......	......	......	......	......	......	......

TABLE SHOWING THE ANNUAL PRODUCTION AND PRICE OF WHEAT AND CORN FOR THE YEARS 1850 TO 1903, INCLUSIVE.

Year.	Bushels of Wheat.	Average. Number of Bushels per Acre.	Price per Bushel.		Bushels of Corn.	Average Number of Bushels per Acre.	Price per Bushel.	
			Range.	Average.			Range.	Average.
1850	31,500,000	18	$0 70 to $1 10	$0 89	56,619,608	36.8	$0 24 to $0 51	$0 38
1851	25,309,225	15.2	58 to 78	69	61,271,382	36.7	30 to 94	38
1852	23,043,737	14.1	59 to 63	60	58,165,517	33.6	25 to 45	39
1853	17,118,311	12	60 to 85	73	73,436,070	40	37 to 55	42
1854	11,989,110	8	85 to 1 70	1 19	52,171,551	26	40 to 55	49
1855	19,569,320	13.81	1 10 to 2 00	1 54	87,587,434	39.7	55 to 80	67
1856	15,333,837	10.2	90 to 1 70	1 27	57,802,515	27.7	32 to 63	42
1857	25,397,614	14	1 00 to 1 60	1 18	82,555,186	36.6	48 to 80	59
1858	17,655,483	10.4	67 to 1 00	77	50,863,582	27.7	25 to 61	42
1859	13,317,967	7.2	90 to 1 70	1 15	68,780,846	29.5	50 to 90	72
1860	23,640,356	13.8	93 to 1 38	1 17	91,588,704	38.2	39 to 80	50
1861	20,055,424	11	65 to 1 12	93	74,858,878	33.5	28 to 50	34
1862	20,764,887	12	72 to 1 00	86	62,704,887	30	27 to 40	31
1863	20,452,410	11.36	82 to 1 30	1 04	54,614,617	27	35 to 70	53
1864	15,541,885	9.33	95 to 2 12	1 41	54,053,491	27	63 to 1 27	1 03
1865	13,234,139	9	1 25 to 2 07	1 78	68,053,668	35	56 to 1 29	77
1866	5,821,747	4.5	1 75 to 2 80	2 27	80,386,320	36.5	45 to 65	54
1867	13,350,721	11.51	1 95 to 3 50	2 79	63,875,064	29.8	59 to 98	79
1868	16,480,059	11.31	1 90 to 2 65	2 31	76,725,288	34.4	82 to 1 08	92
1869	26,499,729	15.37	1 15 to 1 98	1 57	62,443,346	28.4	57 to 1 10	73
1870	18,726,341	11.29	1 08 to 1 33	1 15	88,565,299	37.5	69 to 1 05	83
1871	22,274,378	13.27	1 10 to 1 55	1 27	98,363,060	36.7	50 to 79	56
1872	18,987,664	11.22	1 13 to 2 08	1 58	103,058,234	40.9	44 to 57	49
1873	21,974,385	12.61	1 30 to 1 80	1 56	84,049,328	35.1	39 to 50	42
1874	26,806,818	14.51	1 03 to 1 60	1 38	101,815,494	39.8	42 to 75	60
1875	17,867,967	9.22	1 03 to 1 75	1 16	97,825,024	34.1	58 to 87	72
1876	15,354,569	10.18	1 00 to 1 50	1 10	112,552,642	36.8	40 to 73	51
1877	27,306,566	15.63	1 08 to 2 15	1 41	101,884,305	32.5	40 to 57	46
1878	35,218,783	16.58	85 to 1 35	1 11	114,839,107	37.8	48 to 49	42
1879	41,052,120	17.78	85 to 1 15	96	96,908,800	34	31 to 45	37
1880	48,540,307	17.20	93 to 1 37	1 16	105,414,504	38.9	42 to 51	42
1881	38,102,633	13.8	88 to 1 39	1 10	78,712,796	31	40 to 87	49
1882	42,112,103	15.59	95 to 1 50	1 32	90,869,137	34	56 to 87	72
1883	27,169,738	10.67	95 to 1 17	1 05	64,001,618	24.2	44 to 76	54
1884	36,396,119	14.4	80 to 1 10	1 01	87,797,813	33.3	40 to 62	53
1885	24,183,430	9.8	72 to 1 09	89	112,192,744	39	37 to 59	47
1886	37,660,681	14	74 to 1 00	88	88,818,556	33.5	32 to 48	39
1887	28,400,000	10.4	71 to 89	80	83,118,838	30.5	34 to 55	40
1888	26,160,994	11.7	71 to 96	85	111,155,506	38.9	44 to 61	52
1889	31,663,448	14.6	73 to 1 15	93	87,838,192	32.3	30 to 49	37

1890	31,509,676	13.8	75 to 1 02	83	63,694,215	24.5	27 to 56	36
1891	45,063,480	17.5	82 to 1 16	99	86,500,000	33	49 to 77	60
1892	38,381,598	14.4	73 to 1 01	90	81,892,100	30.8	39 to 67	48
1893	43,121,599	17.2	52 to 93	64	77,229,446	25	37 to 45	42
1894	45,587,534	20	48 to 56	51	88,805,607	25	35 to 59	45
1895	28,759,647	11.9	53 to 90	66	102,447,445	33.9	24 to 56	41
1896	19,511,788	8.53	55 to 97	72	134,796,274	41	18 to 33	27
1897	36,718,686	16.15	72 to 1 00	88	103,004,970	34.34	22 to 34	28
1898	41,041,671	15.56	64 to 1 45	87	114,214,148	37.35	27 to 41	34
1899	41,469,703	14.02	68 to 77	72	115,138,669	36.74	29 to 40	36
1900	10,866,155	6	70 to 89	75	143,161,675	38	32¾ to 47	40
1901	31,150,373	14.57	64 to 90	77	92,368,811	25.74	39 to 74	52
1902	36,901,212	18.1	63 to 84	74	122,675,349	37.3	40 to 62	56
1903	29,074,367	14.4	70 to 93	78	92,820,349	29.1	41 to 53	45
1904 (estimated)	18,693,067	11.9	90 to 1 15	102	91,993,448	30.8	42 to 50	45

TABLE SHOWING THE AVERAGE PRODUCTION AND PRICE OF WHEAT AND CORN BY DECADES.

Decades.	Average bushels of wheat.	Average bushels per acre.	Range of price per bushel.	Average price per bushel.	Average bushels of corn.	Average bushels per acre.	Range of price per bushel.	Average price per bushel.
1850 to 1860	20,023,460	12.29	$0 58 to $2 00	$1 00	64,920,369	33.4	$0 24 to $0 90	$0 48
1860 to 1870	17,584,085	10.91	60 to 3 50	1 61	68,930,426	32	27 to 1 29	64
1870 to 1880	24,656,959	13.29	85 to 2 15	1 27	99,986,129	36.5	38 to 1 05	54
1880 to 1890	34,038,945	13.21	71 to 1 50	1 00	90,991,979	33.5	30 to 87	45
1890 to 1900	38,042,989	15.19	48 to 1 45	77	89,648,770	32	18 to 77	39

AVERAGE PRICES OF OTHER FARM PRODUCTS THAN WHEAT AND CORN IN THE LOCAL MARKETS OF OHIO FROM 1855 TO 1904, INCLUSIVE.

	Barley.	Oats.	Rye.	Hay.	Potatoes.
	Per Bush.	Per Bush.	Per Bush.	Per Ton.	Per Bush.
1855	$1 35	$0 29½	$0 70	$14 71	....
1856	1 58	46	91	21 00	....
1857	58	36	58	13 46	....
1858	67	57	82	15 38	....
1859	76	43	86	17 73	....
1860	69	27	56	12 62	....
1861	60	30	48	11 85	....
1862	1 36	58	76	16 34	....
1863	1 51	78½	1 35	27 16	....
1864	1 28	52	1 15	26 00	....
1865	1 41	42	80	12 63	....
1866	1 53	57	1 28	19 76	....
1867	2 11	69	1 62	14 80	....
1868	2 37	64	1 28	16 42	....
1869	1 26	54	92	17 44	....
1870	1 00	46	91	18 45	....
1871	78	37	85	20 79	....
1872	87	36	76	22 18	....
1873	1 51	48	93	17 16	....
1874	1 41	59	1 06	20 98	....
1875	1 20	38	74	17 66	....
1876	90	37	74	11 67	....
1877	52	29	59	9 86	....
1878	1 00	27	54	10 79	....
1879	89	34	82	15 87	....
1880	98	38	1 04	16 56	....
1881	1 05	50	94	17 90	$1 07
1882	76	39	62	12 39	67
1883	76	34	62	11 63	46
1884	80	32	63	12 81	50
1885	86	30	63	12 16	48
1886	61	29	58	11 17	53
1887	81	33	62	14 79	88
1888	78	26	52	12 74	40
1889	57	27	50	10 56	52
1890	77	48	81	10 58	97
1891	70	33	85	11 25	45
1892	69	33	73	11 10	55
1893	64	32	55	12 55	74
1894	60	35	52	10 95	66
1895	56½	27	53	12 70	49
1896	36	20	36	12 83	28
1897	39	22	39	11 00	48
1898	47	27	51	8 65	57
1899	52	27	62	10 10	49
1900	51	25	59	13 95	43
1901	62	34	60	11 00	60
1902	57	37	54	10 50	65
1903	58	38	59	12 00	75
1904	59	37	60	11 50	80

TABULAR STATEMENT EXHIBITING THE NUMBER OF HORSES, CATTLE, MULES, SHEEP AND HOGS RETURNED BY THE SEVERAL COUNTY AUDITORS, FOR THE YEARS 1903 AND 1904.

Counties.	Number of Horses.		Number of Cattle.		Number of Mules.		Number of Sheep.		Number of Hogs.	
	1903.	1904.	1903.	1904.	1903.	1904.	1903.	1904.	1903.	1904.
Adams	4,641	4,723	10,615	10,467	218	234	5,890	5,404	10,478	8,899
Allen	9,087	8,945	17,614	15,690	92	99	17,487	16,380	23,354	21,911
Ashland	7,571	7,768	15,349	15,758	83	85	34,314	33,382	20,808	19,392
Ashtabula	9,906	9,609	32,201	32,186	20	26	10,972	8,829	5,465	5,247
Athens	4,438	5,168	10,370	10,069	113	123	42,075	41,739	2,954	2,945
Auglaize	8,541	8,626	17,168	16,972	113	102	8,614	7,163	22,407	22,179
Belmont	8,508	8,094	18,208	17,221	428	502	65,923	63,307	9,758	9,105
Brown	6,420	6,459	12,897	12,804	274	322	7,139	6,752	20,069	20,849
Butler	10,440	10,435	17,011	16,820	521	548	7,232	6,712	21,780	24,376
Carroll	4,365	4,521	13,654	12,939	81	74	50,675	51,575	9,102	8,509
Champaign	10,453	10,400	20,258	18,297	222	295	17,991	15,993	34,498	35,287
Clark	10,899	10,915	19,469	28,474	375	392	20,003	20,522	25,059	25,400
Clermont	6,606	6,431	10,435	9,987	566	491	4,375	3,654	14,549	13,798
Clinton	9,568	9,459	17,250	15,957	380	456	16,996	15,217	37,210	36,826
Columbiana	10,024	9,927	21,839	21,727	103	142	26,758	24,750	11,927	12,596
Coshocton	5,968	5,720	18,306	16,796	166	162	72,661	74,759	15,736	12,535
Crawford	8,713	8,647	17,080	16,164	128	141	40,976	42,133	30,261	24,216
Cuyahoga	17,598	17,424	16,615	15,977	59	62	5,496	4,711	2,794	2,610
Darke	16,534	16,347	26,928	25,269	317	348	6,144	4,549	39,670	40,934
Defiance	6,352	6,078	10,519	10,358	58	49	14,724	13,889	15,360	15,243
Delaware	7,727	8,139	21,196	20,074	96	132	38,526	37,711	24,420	23,376
Erie	5,660	5,424	8,418	7,762	14	16	10,691	9,908	7,235	7,209
Fairfield	9,666	9,761	22,346	21,140	170	148	13,780	12,055	31,158	32,465
Fayette	9,289	9,033	20,070	18,739	269	310	9,710	7,720	29,967	32,777
Franklin	14,804	14,808	21,037	20,763	160	160	10,507	9,624	22,138	23,624
Fulton	7,269	6,883	18,030	17,524	30	22	16,952	15,455	21,298	22,956
Gallia	4,520	4,486	11,491	10,366	178	166	9,144	9,092	5,454	5,344
Geauga	5,248	5,134	21,725	21,471	24	26	7,013	5,553	4,368	4,183
Greene	9,757	9,659	18,956	17,656	263	281	15,642	15,511	30,099	30,661
Guernsey	5,094	4,928	13,639	13,161	277	340	61,659	60,549	6,826	5,647

Hamilton	16,498	16,483	17,907	17,739	1,017	935	1,992	1,701	9,865	9,431
Hancock	10,468	10,863	24,472	25,160	63	50	36,428	36,130	33,075	36,663
Hardin	8,130	8,304	19,480	19,233	95	106	31,798	31,144	31,859	32,062
Harrison	4,988	4,854	11,415	10,568	105	121	94,425	91,171	6,209	5,404
Henry	7,085	6,833	15,427	14,294	56	82	7,748	6,926	18,494	18,743
Highland	8,437	8,166	20,462	20,046	375	360	14,690	13,327	32,731	32,627
Hocking	3,568	3,583	9,414	9,324	78	64	13,911	14,121	5,643	5,309
Holmes	7,132	7,292	17,978	19,271	57	54	23,705	23,733	22,529	18,154
Huron	7,855	7,907	15,685	15,138	78	74	47,172	48,254	15,649	14,252
Jackson	3,441	3,214	10,349	9,724	768	764	5,650	4,501	3,557	3,446
Jefferson	5,595	5,580	11,962	11,444	364	361	45,023	42,774	6,093	5,811
Knox	7,735	7,873	20,317	18,449	126	140	95,822	96,505	24,363	21,090
Lake	4,428	4,412	7,727	7,680	13	4	4,460	3,792	2,031	2,057
Lawrence	3,767	3,805	9,607	8,734	491	510	1,711	1,499	4,505	4,078
Licking	12,378	13,646	30,307	29,828	143	169	90,760	89,546	30,896	28,555
Logan	9,768	9,276	20,257	18,437	103	121	29,343	26,623	30,840	29,309
Lorain	9,172	9,132	23,903	22,170	36	40	18,774	16,272	9,433	8,412
Lucas	9,682	9,504	10,140	10,268	64	38	1,993	1,873	9,097	9,023
Madison	9,641	9,501	24,032	19,876	302	284	15,842	15,131	36,882	33,243
Mahoning	8,515	8,876	19,589	19,736	97	97	18,557	17,168	8,305	7,457
Marion	7,683	7,656	17,333	15,681	169	175	48,701	46,277	30,518	29,900
Medina	8,179	8,449	18,134	17,891	155	109	23,098	21,705	11,072	11,075
Meigs	4,603	4,506	10,010	9,688	214	233	22,593	24,350	3,180	3,272
Mercer	9,430	9,696	18,125	18,763	128	152	10,193	9,032	26,858	27,180
Miami	11,542	11,328	16,064	15,928	289	370	3,347	2,647	18,233	20,090
Monroe	5,268	5,036	12,203	11,555	69	59	9,326	9,109	5,927	5,202
Montgomery	16,140	15,698	20,915	19,738	276	280	2,500	2,069	22,406	23,584
Morgan	4,560	4,578	13,043	11,918	26	39	54,973	55,758	5,031	4,936
Morrow	7,388	7,350	15,837	15,294	71	66	72,400	61,644	16,282	15,843
Muskingum	8,903	9,092	24,525	23,915	182	183	82,556	81,016	12,277	11,142
Noble	4,583	4,392	14,581	13,864	34	34	48,434	45,358	7,459	6,072
Ottawa	5,395	5,564	9,040	8,960	50	48	4,918	4,787	8,070	8,689
Paulding	5,923	6,478	8,369	8,342	65	84	8,095	6,938	11,643	8,331
Perry	5,824	5,79.	13,791	13,776	122	136	28,265	26,038	9,589	9,117
Pickaway	9,302	9,837	22,990	20,086	347	335	6,886	6,027	26,068	24,644
Pike	3,947	3,818	6,782	6,418	177	205	4,089	3,704	7,165	6,573
Portage	8,079	8,622	22,266	22,665	77	111	16,982	15,343	7,553	8,085
Preble	9,937	9,983	18,824	18,367	346	353	5,290	5,031	29,481	33,080
Putnam	8,953	8,987	19,704	19,328	54	63	10,979	9,851	28,801	30,199
Richland	8,935	9,203	18,817	18,906	150	140	39,248	37,747	25,275	23,617
Ross	10,255	10,236	22,299	20,744	156	181	9,004	7,890	25,215	25,372
Sandusky	8,686	8,760	15,800	14,966	38	44	15,195	14,585	15,188	19,872
Scioto	5,314	5,458	9,200	8,854	528	519	1,809	1,767	7,512	7,377
Seneca	9,207	9,484	19,292	19,423	74	130	35,498	35,427	28,913	29,925
Shelby	9,157	9,014	16,096	16,147	115	109	7,848	4,800	16,412	19,803

TABULAR STATEMENT EXHIBITING THE NUMBER OF HORSES, CATTLE, MULES, SHEEP AND HOGS RETURNED BY THE SEVERAL COUNTY AUDITORS, FOR THE YEARS 1903 AND 1904—Concluded.

Counties.	Number of Horses.		Number of Cattle.		Number of Mules.		Number of Sheep.		Number of Hogs.	
	1903.	1904.	1903.	1904.	1903.	1904.	1903.	1904.	1903.	1904.
Stark	14,836	14,501	26,580	26,212	369	315	16.565	15,283	22,993	21,938
Summit	8,985	8 129	20,585	20,067	95	116	6,722	5,416	9,690	9,300
Trumbull	10,458	10,229	30,676	29,922	82	77	16,540	13,367	6,276	6,795
Tuscarawas	7,417	7,350	20,720	20,230	229	225	27,644	26,686	13,083	11,612
Union	8,190	8,459	17,738	16,544	95	104	32,485	29,830	34,069	32,119
Van Wert	8,184	8,422	13,127	12,761	191	202	11,674	10,394	23,198	24,236
Vinton	2,347	2,295	6,031	5,988	112	125	17,615	16,075	2,214	2,109
Warren	9,650	9,439	18,072	15,261	388	442	5,860	6,136	20,433	20,226
Washington	7,107	7,120	15.333	14,629	143	150	27,433	26,282	6,221	6,623
Wayne	11,911	12,267	25,500	25.348	227	281	19.521	17.421	27.953	27.830
Williams	6,579	6,931	14.454	14,923	42	58	25,877	25,722	22,834	23,758
Wood	10,808	11.278	20.948	20.869	64	78	14.642	14.681	31,178	32.096
Wyandot	7,407	7,705	14.826	14.406	105	131	62,773	60,090	29,148	29.062
Totals	725,024	726,204	1,509,754	1,464,324	16,283	16.990	2,127,451	2,033,072	1,553,676	1,536,308

Horses	1,180 increase.
Cattle	45,430 decrease.
Mules	707 increase.
Sheep	94,379 decrease.
Hogs	17,368 decrease.

ANNUAL AGRICULTURAL STATISTICS.

1903--1904.

The following agricultural statistics, as returned by township assessors in May, are reported to the Secretary of Agriculture by the county auditors, in accordance with Section 1523 of the Revised Statutes.

The crops, to which these statistics relate, being for the preceding year, have value as matters of record and reference, and as a basis for comparison in estimating the condition or prospects of crops during the growing and harvest seasons, which estimates are published monthly by the Department of Agriculture, and give valuable information to farmers at times when most needed and when of the most benefit.

The annual agricultural statistics here published present a very vivid picture of the importance of Ohio as an agricultural state, and the great diversity of her agricutural products, and point conclusively to the counties most noted for any particular production as well as the range of production in the different counties, and in these respects also have interest and value.

In the case of fall seeded grain crops, the area is returned for the current year's harvest, and for the crops of corn and potatoes the estimated area is returned for the anticipated harvest of the year. These stated areas enables the Department to make valuable estimates on probable total production of growing crops and with considerable degree of correctness.

AGRICULTURAL STATISTICS.

Counties.	Wheat.			Rye.			Buckwheat.		Oats.			Winter Barley		
	Acres sown for harvest 1903.	Bushels produced 1903.	Acres sown for harvest 1904.	Acres sown for 1903.	Bushels produced 1903.	Acres sown for 1904.	Acres sown 1903.	Bushels produced 1903.	Acres sown 1903.	Bushels produced 1903.	Acres estimated sown for 1904.	Acres sown 1903.	Bushels produced 1903.	Acres sown for 1904.
Adams	18,669	148,545	15,822	580	3,075	779	2	10	4,419	59,534	4,703	....	....	....
Allen	22,435	324,217	23,946	272	2,939	174	1	2	10,119	302,810	12,735	23	370	....
Ashland	27,195	526,045	27,983	474	5,519	210	53	136	18,413	565,682	17,912	62	1,640	25
Ashtabula	7,991	134,833	6,147	843	12,115	689	3,218	52,841	24,242	869,065	19,589	7	116	6
Athens	8,053	93,066	4,636	175	555	66	24	255	1,337	22,175	1,516	....	....	....
Auglaize	35,516	487,651	32,072	187	2,184	184	30	245	16,988	471,366	21,344	9	300	....
Belmont	19,861	274,261	16,069	208	2,212	175	17	160	8,586	192,775	9,964	10	30	7
Brown	19,098	149,303	15,560	2,722	13,146	3,305	14	142	8,643	133,557	8,917	....	....	4
Butler	51,726	707,537	51,277	339	3,768	343	4	60	9,035	209,774	13,271	1,358	32,761	695
Carroll	12,665	198,306	12,831	64	482	38	7	65	12,296	331,410	11,759	3	45	....
Champaign	32,742	458,138	27,278	559	4,559	486	9	19	18,238	602,733	29,750	5	200	42
Clark	31,605	399,583	26,228	533	5,403	559	4	52	10,460	302,931	15,886	13	....	....
Clermont	12,373	100,295	8,622	1,456	9,170	1,687	4	69	11,207	175,627	13,500	1	8	....
Clinton	35,887	459,657	32,887	703	6,716	997	2	2	5,223	121,359	9,730	....	....	5
Columbiana	19,162	360,164	19,252	191	2,401	130	41	570	20,462	621,583	18,782	....	....	....
Coshocton	22,044	303,451	20,348	237	1,783	206	72	507	10,107	247,734	11,655	109	....	....
Crawford	23,244	401,127	26,644	89	1,036	78	15	230	24,982	826,288	25,899	10	130	....
Cuyahoga	7,456	141,496	7,949	617	9,482	475	8	158	17,624	608,013	14,065	165	....	5
Darke	62,659	815,840	53,789	230	3,455	286	6	46	20,774	650,324	40,253	51	905	46
Defiance	10,185	150,951	16,412	118	1,377	234	94	1,201	22,286	637,513	24,316	17	315	15
Delaware	9,933	124,857	11,518	784	6,971	634	57	340	13,451	376,035	12,507	....	....	....
Erie	12,669	243,747	13,288	331	4,044	148	223	3,008	13,877	486,931	14,134	20	610	18
Fairfield	40,783	585,493	37,647	478	5,086	425	....	....	5,845	157,227	5,977	64	1,335	....
Fayette	33,263	425,866	28,797	251	1,708	420	....	....	4,063	98,763	10,658	....	....	....
Franklin	33,711	346,855	29,437	1,256	12,556	1,468	4	20	15,056	421,819	17,413	....	....	....
Fulton	9,966	173,507	14,506	904	11,229	541	87	1,233	24,582	858,426	26,533	50	110	44
Gallia	10,983	116,478	9,930	685	3,412	278	4	16	3,126	38,132	2,379	....	....	....
Geauga	5,651	115,501	5,390	155	2,640	121	295	6,277	14,478	513,083	12,568	12	125	....
Greene	41,278	593,092	35,400	374	3,673	349	30	1,110	5,474	146,099	8,871	5	96	....
Guernsey	12,515	143,339	10,570	248	1,554	250	68	341	6,229	118,181	6,253	....	....	....
Hamilton	16,543	425,715	15,802	805	11,030	502	1	10	4,254	177,195	3,676	148	4,820	123
Hancock	35,041	509,804	34,870	284	4,328	177	3	27	14,081	418,634	22,825	13	299	16
Hardin	26,574	303,581	31,057	562	5,361	318	14	247	12,751	485,710	18,565	13	355	7
Harrison	10,335	161,842	7,658	13	177	16	4	18	7,064	161,366	6,869	....	....	....

Henry	19,542	335,378	20,571	2,304	27,217	817	45	600	21,372	694,690	31,446	40	985	51
Highland	35,694	323,171	31,202	383	2,528	741	1	10	4,858	83,275	5,608	12	350	32
Hocking	11,779	129,578	9,491	256	2,188	291	135	1,034	2,680	39,939	2,683	....	....	....
Holmes	26,022	456,296	24,486	394	3,647	211	39	284	18,350	572,156	16,958	....	....	....
Huron	26,373	475,545	28,874	44	330	60	20	295	28,649	939,569	27,264	6	105	....
Jackson	7,167	67,904	6,451	135	664	167	112	1,133	1,856	21,715	1,354	....	....	....
Jefferson	11,236	183,173	10,561	65	537	99	12	143	10,308	282,340	10,355	....	....	....
Knox	25,963	429,047	24,610	770	7,403	535	14	95	11,333	345,606	10,995	43	178	....
Lake	3,308	53,527	3,330	619	9,165	605	263	4,781	8,219	290,652	7,367	1	15	3
Lawrence	3,564	31,141	2,970	60	205	97	....	....	3,653	39,139	3,671	5	....	....
Licking	30,198	442,639	27,948	2,092	18,433	1,290	51	600	13,265	348,527	13,301	17	560	27
Logan	27,533	372,444	25,803	975	11,035	973	8	87	13,999	402,906	21,768	26	980	13
Lorain	18,292	356,840	19,114	217	3,825	199	17	311	22,153	824,596	21,904	21	413	19
Lucas	6,207	122,761	7,896	893	9,748	457	336	4,717	14,513	508,044	16,277	127	2,756	2
Madison	12,660	136,341	12,330	976	7,916	548	....	....	25,766	776,239	32,502	74	120	....
Mahoning	13,870	274,480	19,299	221	3,154	220	96	1,316	14,661	585,144	15,408	....	....	....
Marion	15,273	222,556	15,107	461	4,401	257	7	89	18,675	599,228	22,772	....	....	....
Medina	19,647	383,886	21,871	721	10,965	531	39	402	22,735	860,545	21,603	20	30	17
Meigs	11,842	135,563	9,209	232	1,925	244	25	261	2,383	36,557	1,960	....	....	....
Mercer	31,618	450,140	30,125	159	1,996	196	11	93	23,940	655,469	30,340	43	1,055	22
Miami	41,808	619,491	41,616	94	625	6	....	....	17,115	602,547	23,540	....	....	....
Monroe	17,168	215,103	14,437	282	2,847	235	198	1,652	7,636	139,024	7,472	3	....	....
Montgomery	40,287	616,037	32,877	181	1,836	118	....	....	9,265	286,054	18,147	55	1,055	22
Morgan	10,824	141,511	8,931	188	1,586	79	24	190	2,635	55,393	2,876	....	....	....
Morrow	14,487	276,293	17,027	540	6.808	304	....	....	16,717	530,865	15,605	....	....	....
Muskingum	21,032	283,998	18,745	573	5,643	438	7	31	7,178	148,818	7,438	10	740	....
Noble	12,149	154,181	9,724	161	1,296	55	3	3	3,543	64,919	3,482	....	....	....
Ottawa	9,661	171,418	11,692	179	2,280	121	6	55	13,120	421,276	15,274	....	....	....
Paulding	9,694	153,925	12,570	703	9,902	594	103	952	27,072	776,817	35,932	52	1,021	91
Perry	13,647	181,779	14,960	200	2,487	227	121	1,070	2,707	66,394	2,537	....	....	....
Pickaway	56,146	634,030	52,675	366	1,984	454	3	44	2,762	66,498	6,077	....	....	....
Pike	11,207	94,178	8,361	280	1,582	246	128	3,132	3,953	54,473	3,976	1	....	9
Portage	16,659	348,747	17,681	419	5,241	240	196	3,599	20,161	793,471	18,143	6	122	3
Preble	43,514	531,004	44,798	83	465	274	4	40	8,136	257,269	14,824	7	....	14
Putnam	38,937	525,643	31,697	994	11,740	518	18	247	12,609	407,647	22,959	43	966	32
Richland	29,949	607,350	30,601	485	5,387	302	16	226	23,188	768,134	22,930	39	1,142	31
Ross	41,706	462,762	38,165	465	2.673	802	72	783	2,456	43,009	3,409	10	....	....
Sandusky	26,083	449,398	27,531	260	2,952	134	6	80	22,430	766,800	7,668	....	....	11
Scioto	12,931	130,278	10,657	144	488	215	134	1,512	4,577	47,880	3,916	....	....	....
Seneca	44,006	723,383	44,750	51	815	29	8	136	24,127	757,267	31,015	....	....	9
Shelby	34,756	450,296	35,753	82	690	72	2	4	24,851	734,809	30,050	....	....	....
Stark	41,633	891,259	40,933	241	3,318	208	27	313	29,494	1,092,962	30,000	2	20	3
Summit	20,073	427,288	21,624	277	4.594	231	65	1,161	18,217	672,890	17,486	9	250	9
Trumbull	10,307	207,699	10,212	273	3,414	230	632	9,236	21,694	783,715	18,510	2	40	50
Tuscarawas	33,815	408,564	22,561	251	2,307	164	61	889	17,948	472,234	17,647	....	....	....
Union	14,999	170,175	16,696	904	9,067	763	59	391	15,822	413,370	21,291	12	100	8
Van Wert	21,127	322,420	21,161	761	10,396	470	4	46	16,899	581,858	24,737	56	840	52
Vinton	5,728	58,961	3,386	211	1,303	73	84	645	1,988	27,902	1,152	....	....	....
Warren	29,208	358,854	26,511	431	3,718	614	16	159	9,981	204,297	11,860	380	10,015	190
Washington	21,344	251,281	17,132	205	1,480	140	92	885	7,557	122,943	7,420	2	45	....
Wayne	40,633	900,144	41,587	374	5,341	290	11	257	28,057	1,244,396	26,870	12	308	3
Williams	13,475	231,349	19,232	237	3,157	263	32	379	25,930	796,137	26,494	64	1,426	22
Wood	22,184	453,687	23,511	421	5,401	170	46	760	44,133	1,318,483	52,887	145	3,071	34
Wyandot	22,797	335,328	23,109	160	1,484	122	11	89	16,130	465,312	18,034	236	5,635	252
Totals	1,981,573	29,074,367	1,901,773	41,180	416,735	34,487	7,835	109,651	1,213,228	37,305,993	1,381,998	3,749	78,988	2,077

AGRICULTURAL STATISTICS—Continued.

Counties.	Spring Barley.			Corn.			Ensilage Corn.		Broom Corn.		Sugar Corn.		Tomatoes.		Peas.	
	Acres sown 1903.	Bushels produced, 1903.	Acres estimated sown for 1904.	Acres planted, 1903.	Bushels shelled produced 1903.	Acres planted estimated for crop of 1904.	Acres planted, 1903.	Acres planted estimated for crop of 1904.	Acres planted, 1903.	Pounds broom brush produced 1903.	Acres planted, 1903.	Tons produced, 1903.	Acres planted, 1903.	Bushels produced 1903.	Acres planted, 1903.	Pounds produced 1903.
Adams	....	....	....	33,830	659,528	34,841	....	....	16	600	2	2	....	....	15	....
Allen	175	3,867	161	31,003	1,062,426	31,496	21	21	....	....	....	....	....	....	2	1,100
Ashland	29	1,011	7	23,686	889,276	23,250	24	11	....	....	....	....	17	1,900	....	....
Ashtabula	32	520	17	14,233	389,393	12,895	3,703	3,374	....	....	6	20	50	7,635	....	....
Athens	....	....	14	9,603	228,453	8.633	10	5	....	....	40	500	31	880	17	3,250
Auglaize	25	512	28	47,246	1,647,150	46,531	....	....	5	3,000	6	22	3	235	2	1,800
Belmont	15	48	6	18,645	524,364	19,099	422	404	....	....	13	97	153	22,798	2	3,225
Brown	1	20	....	44,742	965,403	44,364	35	35	6	1.008	3	7	135	19,460	....	....
Butler	106	2,435	238	52,632	1,680,633	56,268	44	28	11	6,000	98	154	29	5,320	....	....
Carroll	....	....	....	11,674	389,010	10,712	33	17	....	....	....	....	....	....	....	....
Champaign	77	1,860	84	62,209	2,081,850	60,512	154	158	20	6,000	6	4	....	....	1	200
Clark	38	620	126	45,948	1,418.098	51,177	34	29	....	....	12	24	10	2,490	4	....
Clermont	....	....	....	34,306	1,188,543	33,374	96	110	....	....	258	242	714	92,415	1	400
Clinton	6	90	18	56,028	1,443,153	59,435	20	66	....	....	322	394	37	4,625	1	2,000
Columbiana	2	65	3	17,126	655,691	16,105	1,015	970	....	....	11	20	13	2,630	2	180
Coshocton	8	118	6	23,119	578,336	23,058	13	10	....	....	....	....	2	90	2	4,000
Crawford	76	1,814	55	37,720	1,427,556	35,566	15	5	....	....	2	40	2	500	2	130
Cuyahoga	13	262	2	9,805	310,128	9,609	2,792	2,290	2	....	20	73	60	14,205	8	4,400
Darke	68	1,611	116	86,003	3,553,020	89,916	18	19	9	6,000	48	134	19	4,466	....	....
Defiance	2,435	52,157	1,793	28,394	1,114,482	30,426	....	....	....	....	....	....	14	1,825	36	47,000
Delaware	....	....	....	39,272	1,397.833	35,008	140	127	....	....	....	....	....	....	....	....
Erie	204	5,945	255	15,368	489,991	14,909	43	41	....	....	11	12	4	790	....	....
Fairfield	....	....	....	49,398	2,100,073	49,463	....	....	....	....	213	369	151	22,725	2	3,500
Fayette	7	140	10	53,034	1,439,774	55,373	615	590	....	....	5	15	9	2,280	....	....
Franklin	24	340	15	60,722	1,722,803	59.460	262	262	7	1,600	105	1,103	229	42,331	15	8,715
Fulton	1,180	29,013	1,172	32,843	1,353,100	32.831	31	43	....	....	18	56	31	5,237	....	....
Gallia	....	....	....	17,925	387,901	16,962	17	5	8	3,200	5	1	1	150	4	100
Geauga	2	35	10	8,279	259,773	8,262	2,825	2,713	....	50	....	....	1	150	1	600
Greene	....	....	6	53,202	1,723,825	55.848	81	78	....	....	....	....	69	13,745	....	....
Guernsey	7	75	10	15,799	358.505	15.272	88	99	1	400	....	....	11	108	....	....
Hamilton	....	....	10	19,021	578,555	17.604	....	....	5	3,500	67	436	240	47,165	....	....
Hancock	354	4,081	197	49,787	1,897,955	53.502	40	27	....	....	1	....	2	1,000	1	3,600
Hardin	37	1,059	31	44,524	1,186,468	47,456	21	65	....	....	275	200	16	1,075	....	....
Harrison	....	....	3	9,554	279.852	9,143	59	34	....	....	....	....	....	....	....	....
Henry	4,051	87,768	5,857	55,041	2.283,889	56,031	....	....	....	....	....	....	....	....	....	....

Highland	7	150	22	53,489	1,066,210	53,799	55	76	....	....	....	....	30	3,030	3	....
Hocking	....	....	....	13,709	309,986	12,093	3	4	....	75	1	10	48	5,340	....	....
Holmes	....	....	....	22,426	746,882	21,107	10	9	....	....	....	....	16	2,660	....	....
Huron	52	1,180	29	32,432	977,955	28,175	132	129	6	3,250	22	6	35	6,625	....	....
Jackson	10	200	....	12,099	234,165	11,158	....	....	....	....	11	22	1	100	1	....
Jefferson	15	260	16	10,588	348,449	10,097	184	199	....	....	12	8	14	3,695	5	2,460
Knox	....	....	....	31,613	968,379	29,856	....	....	....	....	....	....	....	....	....	....
Lake	67	1,219	159	6,726	167,492	5,990	333	267	....	....	30	33	32	8,070	3	4,220
Lawrence	....	....	....	14,135	244,571	14,044	24	20	1	200	31	40	76	9,529	2	365
Licking	4	60	7	49,616	1,521,885	45,231	130	115	11	5,600	4	11	7	2,395	1	800
Logan	86	1,553	83	50,084	1,444,022	51,356	10	6	....	....	10	69	4	950	1	500
Lorain	46	712	32	21,181	607,907	19,580	775	564	....	....	2	1	45	4,062	22	3,610
Lucas	512	13,374	637	20,666	855,166	22,161	445	545	....	....	34	73	217	47,764	2	....
Madison	47	680	58	69,921	2,197,255	65,578	....	....	35	1,600	....	....	1	50	....	....
Mahoning	....	....	....	13,804	444,144	13,372	1,066	809	....	....	11	10	146	8,513	4	700
Marion	5	200	28	44,233	1,455,135	44,608	35	50	22	60,000	3	4	....	....	....	....
Medina	12	408	47	20,721	717,854	19,737	523	403	9	11,000	5	100	1	200	....	....
Meigs	....	....	1	12,841	258,394	11,211	....	13	12	6,000	34	86	21	2,525	108	52,000
Mercer	751	14,384	980	46,810	1,644,644	49,237	6	8	....	....	....	....	65	13,645	49	48,950
Miami	....	....	....	51,800	1,902,533	53,544	2	3	....	1,750	174	546	5	1,250	....	....
Monroe	6	100	2	16,563	390,670	16,900	20	12	....	....	1	2	2	275	....	....
Montgomery	18	540	25	43,904	1,118,564	46,160	27	29	2	800	78	1,418	52	8,390	6	250
Morgan	....	....	2	13,412	391,757	13,455	5	3	3	....	1	....	....	....	....	....
Morrow	....	....	....	27,143	849,314	25,556	9	40	....	....	83	177	....	....	....	....
Muskingum	....	....	6	26,069	669,356	24,974	249	183	....	....	50	95	9	1,450	10	17,850
Noble	....	....	....	14,776	414,051	14,246	8	3	....	....	....	....	....	....	....	....
Ottawa	2,599	59,467	5,219	26,984	878,627	21,686	20	20	....	....	....	....	151	11,490	....	....
Paulding	7,574	139,429	4,525	47,287	2,016,302	49,548	5	....	1	3,050	....	....	32	6,592	....	....
Perry	....	....	....	15,133	539,028	15,065	....	....	....	....	....	....	22	3,195	....	....
Pickaway	....	....	15	69,657	2,254,422	70,965	....	....	2	200	3,315	7,258	315	39,005	42	106,550
Pike	....	....	2	22,906	521,807	24,151	....	....	2	800	....	....	....	....	5	600
Portage	17	314	18	14,138	489,381	13,525	2,039	1,904	....	....	34	7	13	7,355	44	35,252
Preble	9	277	15	52,257	1,560,045	103,667	49	....	10	4,600	64	142	235	22,248	....	....
Putnam	2,654	51,673	3,268	59,641	2,481,147	61,486	....	....	....	....	44	93	77	6,850	....	....
Richland	31	1,024	33	29,797	945,983	26,855	28	65	....	....	....	....	2	400	3	2,230
Ross	3	20	21	59,404	1,732,452	60,201	191	261	....	....	869	3,392	68	8,155	130	200,882
Sandusky	301	7,904	350	47,243	1,373,728	42,823	10	8	2	800	8	43	21	2,635	....	....
Scioto	....	....	....	21,082	525,367	21,558	1	1	2	1,200	14	170	13	1,185	....	....
Seneca	64	1,358	207	47,532	1,657,142	46,971	....	17	....	....	6	7	1	40	....	....
Shelby	....	24	150	46,139	1,608,075	48,017	7	7	17	6,200	6	5	1	230	....	....
Stark	8	179	18	29,822	1,114,138	28,840	288	272	....	....	1	12	33	6,756	3	1,570
Summit	22	590	22	16,220	566,433	16,080	2,453	2,142	....	....	7	163	11	3,160	5	13,060
Trumbull	8	88	....	13,282	387,613	12,813	2,626	2,287	....	....	2	....	23	6,416	....	....
Tuscarawas	....	....	....	19,124	560,288	18,484	29	25	....	....	17	28	89	18,795	....	....
Union	34	500	47	49,545	1,564,359	48,162	....	....	....	....	5	10	....	....	....	....
Van Wert	5,853	122,409	3,471	45,617	1,623,894	49,053	4	5	....	....	1	4	47	10,240	....	....
Vinton	....	....	....	9,867	180,093	7,660	3	....	....	....	3	8	3	500	....	....
Warren	....	....	1	47,378	1,235,005	46,374	254	140	....	....	785	2,770	1	50	16	1,600
Washington	1	9	4	18,643	451,393	18,217	94	87	....	....	32	1,598	183	34,375	....	....
Wayne	39	772	19	34,926	1,326,645	34,546	47	51	....	....	....	....	6	2,402	....	....
Williams	1,656	39,110	1,287	31,377	1,295,270	31,309	30	18	....	....	....	....	1	230	67	38,400
Wood	3,578	78,820	2,236	81,685	2,924,860	79,395	6	6	....	....	13	37	121	20,400	5	1,400
Wyandot	7	140	9	39,305	1,393,352	38,421	....	....	....	....	1	3	....	....	....	....
Totals	35,068	734,593	33,321	2,945,473	92,820,349	2,983,488	24,917	22,433	227	138,483	9,371	22,386	4,342	661,452	655	617,449

AGRICULTURAL STATISTICS—Continued.

Counties.	Irish Potatoes.			Sweet Potatoes.		Onions.		Meadow.		Clover.				Flax.		
	Acres planted 1903.	Bushels produced 1903.	Acres estimated for crop of 1904.	Acres planted 1903.	Bushels produced 1903.	Acres planted 1903.	Bushels produced 1903.	Acres in grass (other than clover) 1903.	Tons of hay produced 1903.	Acres grown 1903.	Tons of hay produced 1903.	Bushels of seed produced 1903.	Acres plowed under for manure 1903.	Acres sown 1903.	Bushels of seed 1903.	Pounds of fiber 1903.
Adams	393	18,814	280	15	350	......	......	14,869	14,144	6,397	5,350	2,535	359	......	......	......
Allen	605	43,545	538	1	75	......	......	12,314	16,948	17,568	22,222	5,825	947	......	......	......
Ashland	949	91,416	980	......	......	......	......	26,039	32,308	14,005	19,121	4,646	94	943	9,314	851,457
Ashtabula	3,146	207,207	2,505	......	2	79	22,876	49,794	66,712	1,323	1,747	68	28	......	......	......
Athens	253	19,399	240	......	57	6	5	15,340	17,092	1,295	1,930	62	43	......	......	......
Auglaize	1,104	71,778	1,084	2	40	2	20	9,310	11,743	17,926	22,098	9,397	1,342	......	......	......
Belmont	977	97,509	1,194	......	70	......	1,123	38,663	39,909	1,370	1,807	192	......	......	......	......
Brown	404	19,874	382	8	675	......	......	18,771	15,709	5,883	2,623	388	240	......	15	......
Butler	834	72,445	919	1	30	3	725	13,426	15,351	21,844	18,915	5,298	5,834	16	......	......
Carroll	419	42,132	352	......	......	1	88	32,949	31,885	776	894	495	1	1	6	......
Champaign	311	23,795	259	11	71	3	1,100	10,867	11,743	16,606	18,031	7,410	4,642	......	......	......
Clark	633	46,884	626	1	20	......	......	15,835	24,548	7,471	9,320	3,614	728	12	......	......
Clermont	923	54,149	738	77	6,095	8	1,725	21,880	17,351	5,477	5,161	453	916	......	......	......
Clinton	376	18,462	367	1	89	......	......	15,226	19,214	7,698	9,152	5,260	3,198	......	......	......
Columbiana	1,965	201,655	1,870	2	200	2	600	43,340	48,999	3,034	3,842	467	......	8	12	......
Coshocton	1,103	80,089	1,060	6	50	......	12	36,006	38,141	3,556	4,269	1,619	36	7	5	......
Crawford	1,456	138,725	1,435	1	29	1	159	26,191	34,097	14,956	19,273	8,300	142	10	100	......
Cuyahoga	6,730	641,831	6,976	......	......	23	5,930	27,741	35,552	1,628	2,178	60	115	......	......	......
Darke	1,472	85,186	1,378	24	610	11	20	9,871	13,000	34,609	35,011	12,936	12,009	......	......	......
Defiance	765	79,895	731	......	......	......	......	17,265	33,935	15,979	22,627	12,594	660	......	......	......
Delaware	428	34,150	444	......	......	......	......	35,947	42,161	9,110	10,700	2,772	228	......	......	......
Erie	3,109	275,980	3,033	......	......	2	550	8,043	9,807	6,631	7,827	1,564	714	20	8	......
Fairfield	1,096	98,258	1,157	5	474	......	......	32,282	39,809	11,231	13,776	6,725	239	......	......	......
Fayette	46	2,832	27	1	40	1	120	10,438	10,700	8,128	9,830	5,499	851	......	12	......
Franklin	1,813	155,867	1,918	......	......	20	1,920	32,845	39,045	9,598	9,221	3,480	3,263	10	15	......
Fulton	938	102,158	937	......	50	5	2,020	12,398	17,387	14,371	23,772	6,171	72	......	......	......
Gallia	207	15,399	182	4	100	......	......	13,918	11,365	2,447	2,339	165	65	......	......	......
Geauga	2,528	187,475	2,397	1	14	19	4,425	23,368	32,523	998	1,596	17	28	......	......	......
Greene	612	39,612	554	......	......	9	210	11,083	15,983	12,583	13,139	5,794	2,666	......	......	......
Guernsey	553	43,537	446	......	......	......	29	37,686	41,393	846	1,080	401	21	......	......	......
Hamilton	3,518	367,060	3,240	100	11,600	2	500	11,144	11,974	4,763	6,182	1,712	1,062	......	......	......
Hancock	953	90,660	966	......	1	5	590	20,409	27,845	21,944	27,826	8,528	758	......	......	......
Hardin	1,929	144,427	1,863	1	35	6,863	400,745	16,410	23,147	13,728	14,376	5,875	1,238	......	......	......
Harrison	243	19,206	209	......	......	......	......	31,608	31,979	1,563	1,581	143	8	......	......	......
Henry	676	70,510	662	......	......	2	1,200	10,699	16,414	15,517	20,669	12,006	800	10	10	......

Highland	221	12,636	210	....	....	....	....	21,551	20,611	10,555	11,038	6,636	219	6	96	....
Hocking	594	46,804	611	2	149	1	50	15,470	14,034	3,171	3,204	637	92	....	....	....
Holmes	709	66,979	659	9	64	....	....	22,804	27,708	6,687	8,303	3,322	49	15	35	....
Huron	1,360	133,374	1,137	3	....	1	280	30,824	42,546	16,425	19,801	5,253	356	356	3,486	238,500
Jackson	317	19,378	129	1	110	1	30	18,506	13,876	248	219	15	....	....	....	....
Jefferson	614	54,933	517	....	50	3	145	31,875	31,841	1,009	1,158	198	7	....	....	....
Knox	484	44,372	400	....	....	....	....	35,850	45,896	5,816	6,870	2,365	106	....	....	....
Lake	1,912	151,291	1,875	6	705	3,100	331	13,705	17,390	644	915	84	31	....	....	....
Lawrence	338	27,739	249	114	12,070	8	695	5,166	4,533	1,112	758	9	85	....	....	....
Licking	1,120	100,559	1,076	2	181	13	5,750	63,759	71,794	5,717	6,583	2,798	161	....	....	....
Logan	505	32,931	459	1	20	56	9,375	14,601	18,964	18,466	23,448	10,338	1,435	....	....	....
Lorain	2,530	214,945	2,170	14	634	19	6,329	38,610	59,740	6,839	8,872	885	52	133	1,195	92,500
Lucas	3,204	271,991	3,258	4	260	25	4,770	11,054	15,721	4,210	5,236	2,506	357	25	375	60
Madison	155	12,743	146	1	50	1	40	14,213	17,883	11,126	12,827	5,097	4,880	....	....	....
Mahoning	2,201	325,131	2,500	....	....	2	410	41,799	45,502	2,705	4,114	325	....	....	....	....
Marion	671	53,373	670	....	....	....	....	17,010	22,578	11,700	15,399	5,417	886	....	....	....
Medina	2,875	299,437	2,870	....	20	25	5,920	26,153	39,959	15,822	23,684	3,949	85	45	345	2,003
Meigs	679	44,730	492	10	790	1	50	15,801	15,215	2,608	2,931	70	345	....	....	....
Mercer	849	52,150	846	3	130	....	....	10,744	14,104	20,559	25,956	12,820	544	2	16	....
Miami	873	52,816	712	8	450	....	....	7,117	9,192	16,957	14,888	4,853	6,880	10	20	....
Monroe	1,301	114,365	1,261	1	75	8	1,802	29,265	28,280	527	583	145	12	1	4	15
Montgomery	1,020	59,761	1,284	13	935	2	150	13,484	17,365	14,494	15,430	3,899	4,681	....	....	....
Morgan	410	37,339	380	1	49	....	....	25,869	26,218	2,298	2,709	214	20	....	....	....
Morrow	865	85,524	840	....	....	2	247	26,020	36,052	10,676	15,360	3,879	108	....	....	....
Muskingum	861	92,066	840	19	2,755	9	1,340	45,900	44,415	3,521	3,792	448	40	....	....	....
Noble	699	59,902	637	....	....	....	....	29,066	31,671	839	1,103	128	5	3	15	....
Ottawa	773	118,935	737	....	....	....	....	14,841	21,014	6,636	7,798	1,365	116	....	....	....
Paulding	456	42,450	412	1	50	....	....	14,361	21,523	12,077	16,610	6,851	550	....	....	....
Perry	495	41,141	469	2	100	1	170	24,455	26,678	5,018	4,981	1,603	35	....	....	....
Pickaway	382	33,629	359	....	30	....	50	16,741	12,987	11,126	11,674	8,228	1,967	....	....	....
Pike	509	35,168	563	4	35	25	2,000	8,357	9,510	3,372	3,524	1,380	1,569	....	....	....
Portage	7,498	690,889	7,352	....	....	13	8,035	28,994	37,872	4,995	7,326	1,188	166	....	5	....
Preble	399	23,067	367	20	397	....	....	7,733	7,403	26,010	19,013	7,579	14,997	....	....	....
Putnam	780	88,075	858	1	60	98	7,230	14,755	20,855	16,800	22,766	9,834	2,128	....	....	....
Richland	1,469	162,370	1,394	3	500	....	70	23,839	33,675	14,074	18,737	6,631	152	62	530	36,000
Ross	712	59,262	703	....	....	146	20,316	11,171	12,266	11,183	11,009	6,650	3,306	....	....	....
Sandusky	1,941	213,943	1,993	....	....	1,663	5,401	17,442	27,116	8,548	13,251	2,385	160	....	....	....
Scioto	1,036	81,797	983	6	456	5	480	10,726	9,190	2,432	2,051	410	762	....	....	....
Seneca	1,495	150,180	1,439	....	....	25	9,600	21,523	28,506	24,421	30,897	1,018	2,285	....	....	....
Shelby	792	44,376	778	....	9	....	75	7,548	9,084	18,836	20,150	10,948	4,049	....	....	....
Stark	3,156	361,289	3,273	1	16	16	1,388	41,437	52,959	9,304	12,601	2,438	146	2	22	....
Summit	2,968	309,805	3,191	....	314	12	4,631	23,745	31,391	4,325	6,357	1,223	89	50	....	....
Trumbull	3,371	287,837	3,097	1	25	21	5,025	50,582	63,919	1,404	2,145	122	54	....	....	....
Tuscarawas	1,592	145,101	1,539	....	....	6	700	43,016	45,015	2,068	2,374	726	....	5	....	....
Union	216	14,576	181	....	....	....	....	21,651	27,293	15,457	19,098	4,154	531	....	....	....
Van Wert	665	41,852	624	1	25	1	75	20,142	29,386	14,029	21,072	6,371	1,098	....	....	....
Vinton	341	22,139	246	7	675	1	300	15,228	12,939	413	440	86	....	....	....	....
Warren	518	24,487	385	37	642	18	233	17,267	19,465	10,397	9,771	2,064	6,100	....	....	....
Washington	1,469	143,250	1,495	90	10,770	1	324	31,303	29,683	1,917	2,490	243	46	1	2	....
Wayne	3,546	439,791	4,162	4	569	292	122,813	28,792	40,724	16,468	21,882	4,948	120	123	480	24,470
Williams	758	75,025	722	2	69	2	100	23,025	33,541	17,392	22,713	13,813	76	....	....	....
Wood	964	119,026	915	1	10	14	830	23,302	34,181	15,935	18,957	6,149	2,518	....	....	....
Wyandot	643	57,980	599	....	21	21	5,780	19,834	35,450	14,099	18,131	8,154	771	1	15	....
Totals	109,811	9,997,543	107,013	655	55,077	12,723	930,632	1,975,387	2,370,842	816,323	972,580	335,272	108,587	1,826	16,138	1,245,005

AGRICULTURAL STATISTICS—Continued.

Counties.	Tobacco.		Milk.	Butter.		Cheese.		Eggs.		Sorghum.			Maple Products.			Bees.	Honey.
	Acres planted, 1903.	Pounds produced 1903.	Gallons sold for family use 1903.	Pounds made in home dairies 1903.	Pounds made in factories and creameries 1903.	Pounds made in home dairies 1903.	Pounds made in factories and creameries 1903.	Number dozen produced 1903.	No. dozen shipped beyond State 1903.	Acres planted 1903.	Pounds of sugar 1903.	Gallons of syrup 1903.	No. of trees from which sugar or syrup was made 1904.	Pounds of sugar 1904.	Gallons of syrup 1904.	No. of hives 1903.	Pounds of honey 1903.
Adams	2,246	1,681,840	9,630	461,140	....	....	....	873,285	550	56	....	956	3,606	90	1,256	1,284	16,154
Allen	.....	....	272,330	465,905	....	12,130	....	690,139	....	15	61	788	6,587	165	1,958	183	3,875
Ashland	.....	....	241,437	450,262	30,295	....	126,503	730,056	3,750	2	....	102	186,597	18,031	21,240	255	2,847
Ashtabula	.....	....	3,863,466	647,243	189,716	....	1,801,434	763,136	....	.....	....	15	275,421	43,997	70,077	891	16,824
Athens	.....	....	112,240	308,317	820	100	....	501,440	....	.....	....	....	2,487	....	395	219	5,355
Auglaize	7	3,800	181,575	467,276	152,050	5,550	....	915,139	100	94	....	4,741	12,884	217	4,499	590	8,828
Belmont	836	823,282	674,002	672,544	66,880	11,600	....	627,922	4,833	16	....	971	2,940	40	1,274	417	3,955
Brown	4,048	4,237,990	117,350	703,390	....	....	....	962,798	20	10	100	168	1,105	50	392	330	5,168
Butler	1,046	735,100	983,374	664,574	7,800	19,060	....	690,390	2,105	23	....	90	1,020	....	365	258	2,970
Carroll	.....	....	43,595	536,181	10,970	....	15,400	485,412	30,040	1	12	14	554	....	297	59	570
Champaign	35	33,400	577,187	384,055	97,000	108,200	....	492,896	60,000	4	60	78	8,780	1,341	3,885	426	4,815
Clark	188	113,450	773,719	511,895	35,931	97,789	....	495,811	....	12	....	94	278	....	172	218	4,674
Clermont	2,004	1,897,956	535,907	618,773	....	150	....	664,433	....	21	....	511	910	....	330	185	4,639
Clinton	34	17,700	210,035	299,633	86,145	420	....	562,825	....	27	....	204	26,137	330	9,781	289	3,688
Columbiana	.....	....	1,047,929	699,010	920,091	12,000	442,388	843,091	81,350	1	....	164	40,845	1,269	13,866	133	348
Coshocton	1	1,000	91,737	597,335	12,800	99,805	41,350	687,594	360	16	3	392	1,351	90	814	135	1,315
Crawford	.....	....	98,480	589,989	20,590	60	....	849,158	....	5	78	282	19,636	670	6,201	678	7,487
Cuyahoga	.....	....	4,028,711	501,192	67,875	51,520	18,000	538,077	....	3	....	16	68,068	7,325	20,334	333	6,230
Darke	10,196	8,712,814	264,617	1,106,825	81,650	6,975	....	1,715,224	500,000	60	56	2,980	8,807	20	2,519	815	12,938
Defiance	3	1,500	64,020	427,362	44,150	....	300	663,596	....	12	....	1,321	6,362	....	1,775	290	6,855
Delaware	.....	....	169,300	534,815	285,795	....	....	755,003	29,514	3	....	25	25,738	20	6,729	247	5,480
Erie	.....	....	384,350	327,798	3,025	1,500	....	328,209	400	.....	....	45	6,610	700	2,125	234	5,730
Fairfield	.....	....	156,155	730,205	65,410	....	....	920,922	....	432	40	622	3,982	150	2,142	419	4,293
Fayette	.....	....	49,360	163,865	1,500	1,500	....	316,475	1,260	.....	....	....	725	....	279	135	4,040
Franklin	.....	30,000	2,421,266	751,367	188,085	160	....	871,425	....	10	....	128	787	....	444	359	8,620
Fulton	.....	....	227,058	388,017	120,551	191,470	690,905	922,792	....	6	....	529	1,775	20	380	70	800
Gallia	465	360,160	55,645	388,399	500	....	....	519,086	50	236	....	9,006	570	105	171	270	5,921
Geauga	.....	....	973,735	136,448	328,300	....	2,724,501	525,537	....	.....	....	125	631,229	37,640	184,223	188	2,710
Greene	302	176,048	161,832	480,035	91,856	3,190	16	557,097	....	1	....	61	14,191	70	4,789	198	1,688
Guernsey	150	163,959	184,658	522,263	....	....	....	514,915	3,720	12	259	314	358	70	115	241	3,878
Hamilton	105	119,000	2,071,725	537,545	11,000	700	....	444,810	....	4	....	90	....	....	....	168	3,541
Hancock	.....	....	232,045	733,342	1,850	....	500	830,176	513	5	....	246	17,063	167	17,063	447	12,095
Hardin	.....	....	286,205	430,275	300	....	....	846,716	....	1	....	507	5,522	287	1,589	629	17,070
Harrison	.....	....	143,474	316,222	192,605	....	....	402,328	10,500	3	....	92	1,010	247	437	103	781
Henry	.....	....	98,455	594,940	....	250	34,700	1,195,672	....	30	....	2,271	440	....	191	141	2,880

Highland ...	9	10,000	71,585	485,459	75,000	....	....	811,012	500	1	....	30	4,885	68	2,302	219	3,711
Hocking	.....	....	26,680	303,013	....	....	....	307,711	....	14	....	716	406	20	279	211	859
Holmes	.....	....	80,874	522,687	68,745	91,440	199,226	878,188	1,054	1	....	43	4,678	660	1,946	65	645
Huron	.....	....	250,812	669,515	49,785	15,500	4,400	727,381	175	200	....	70	54,567	1,911	15,130	237	7,460
Jackson	.....	....	30,555	252,889	....	....	....	323,287	25	21	....	248	20	18	....	305	2,616
Jefferson ...	.....	....	654,966	529,228	40,525	....	....	390,920	900	15	....	90	2,409	182	1,176	206	2,246
Knox	.....	....	113,268	620,641	66,261	....	....	859,984	100	.....	....	....	27,003	2,045	7,009	171	3,169
Lake	8	3,000	958,498	315,521	64,834	200	11	235,841	600	30	33	....	38,129	8,451	9,282	168	2,885
Lawrence ...	73	63,700	55,902	297,757	....	554	....	258,334	390	334	708	25,364	150	30	60	626	8,435
Licking	.....	....	717,173	834,402	620,357	1,600	....	1,089,814	451	8	....	268	48,936	612	16,170	541	4,942
Logan	.....	50	111,190	414,810	146,700	3,240	145,850	727,662	....	2	....	78	82,360	67,385	35,666	1,027	13,881
Lorain	.....	....	2,064,579	469,227	401,480	235,635	842,881	734,621	275	.....	2	54	85,116	15,027	17,914	447	8,183
Lucas	.....	....	1,486,908	351,594	600	400	....	296,072	....	.....	....	....	175	....	12	257	6,842
Madison	.....	....	97,604	230,822	45,000	100	8,000	433,009	3,500	1	....	12	....	....	....	223	5,070
Mahoning ...	.....	97	1,078,719	739,747	542,333	162,800	132,000	895,877	....	.....	....	....	126,406	4,010	33,142	202	1,490
Marion	.....	....	102,616	467,155	....	....	....	743,495	....	4	....	92	4,069	105	1,090	321	5,960
Medina	136	165,500	644,615	784,145	563,383	27,250	142,807	795,420	1,435	6	....	205	224,159	28,623	67,457	248	1,990
Meigs	1	800	29,645	367,594	1,000	6,150	....	542,402	7,560	90	435	599	12	....	6	523	10,626
Mercer	10	6,200	84,900	484,718	12,500	....	....	1,132,924	....	104	....	5,881	40	40	....	498	11,178
Miami	3,801	3,211,654	246,388	648,103	1,000	17,840	1,400	605,404	....	2	....	119	6,980	....	2,510	117	5,923
Monroe	850	745,955	29,350	526,917	6,405	236,127	248,491	765,634	49,250	56	112	2,849	100	130	15	391	4,140
Montgomery	13,301	8,419,270	1,397,663	909,334	122,770	....	....	698,263	200	10	47	572	3,933	633	1,217	379	6,945
Morgan	2	....	15,568	413,015	200	100	......	775,080	....	7	....	302	463	30	278	96	1,152
Morrow	.....	....	73,057	549,226	52,717	....	....	850,897	....	1	....	17	87,726	1,232	24,538	184	3,059
Muskingum	2	1,100	344,083	714,055	10,899	....	....	756,337	....	2	....	....	889	....	459	306	3,317
Noble	953	783,508	1,800	545,843	....	....	....	733,036	....	10	....	546	20	30	....	133	2,300
Ottawa	.....	....	26,005	325,125	....	....	71,155	428,009	....	1	....	50	....	....	....	167	5,630
Paulding	.....	....	9,650	346,303	....	....	....	694,570	....	4	107	....	414	50	189	974	19,822
Perry	2	1,000	46,490	449,833	900	....	....	537,593	....	10	137	546	8,968	453	4,921	374	2,678
Pickaway ...	.....	....	36,950	366,727	4,175	....	....	801,546	10	2	....	152	768	....	460	249	4,320
Pike	26	19,100	8,038	191,965	....	....	....	344,653	2,000	58	16	1,849	180	80	42	365	2,606
Portage	.....	....	1,126,643	624,292	125,897	200	1,128,230	726,313	16,000	.....	....	....	400,862	3,309	134,604	140	1,849
Preble	5,719	3,203,455	701,715	763,534	74,225	1,653	....	711,325	11,086	9	....	276	7,714	25	2,238	606	7,901
Putnam	4	1,000	24,652	559,548	75,192	12,750	....	1,171,611	....	67	....	3,217	2,494	30	618	702	10,434
Richland	....	....	311,104	677,663	10,570	9,875	....	633,127	500	5	....	129	60,778	5,822	18,264	138	755
Ross	3	4,200	67,995	288,258	300	5,500	....	427,427	....	151	....	117	3,800	....	1,664	....	6,522
Sandusky ...	....	....	191,460	637,504	4,650	....	....	687,274	....	.....	....	....	658	190	150	15	30
Scioto	245	213,075	168,173	294,213	....	....	....	275,651	....	57	15	2,444	....	....	....	577	6,600
Seneca	....	....	141,420	777,473	....	....	....	883,213	....	5	26	345	20,745	475	5,175	264	3,822
Shelby	54	43,355	160,166	493,399	77,905	....	....	823,331	....	63	....	3,851	2,028	....	616	319	3,713
Stark	6	5,150	1,718,879	919,652	59,777	37,100	672,425	915,151	1,135	6	....	210	25,715	60	8,737	218	1,399
Summit	....	....	3,288,673	525,913	112,393	2,200	440,155	497,898	....	.....	....	17	56,086	11,940	18,680	526	6,445
Trumbull ...	....	....	1,684,984	713,105	216,154	485,511	1,327,067	680,426	21,182	.....	....	....	223,720	10,222	65,763	373	4,450
Tuscarawas	....	....	348,586	556,077	50,178	34,632	613,555	640,434	....	6	37	171	1,478	203	718	158	1,097
Union	....	....	538,271	565,560	6,800	250	205,312	929,079	....	6	....	167	23,510	2,418	4,938	380	8,430
Van Wert .	....	....	24,502	601,146	....	....	....	1,382,230	325	4	....	170	21	....	7	492	10,534
Vinton	....	....	3,600	231,877	....	....	....	273,018	....	15	....	393	255	30	110	105	1,637
Warren	3,755	2,014,207	593,875	345,917	227,813	40	....	494,915	340	18	40	57	4,743	175	2,015	224	3,990
Washington	7	6,070	233,955	666,135	47,385	775	12,416	886,730	419,700	82	....	3,142	....	....	....	551	6,986
Wayne	245	313,425	621,855	813,551	141,800	43,105	194,837	967,422	5,500	2	....	344	22,647	1,521	6,633	352	4,225
Williams ...	....	....	451,567	573,236	168,500	106,210	....	842,110	....	13	....	770	24,535	530	6,524	506	8,872
Wood	....	....	631,787	789,820	....	....	....	956,680	100	17	....	529	2,753	25	780	232	4,145
Wyandot ...	....	....	84,010	816,801	125,200	....	23,200	741,001	....	7	....	204	7,826	....	2,262	488	8,936
Totals ...	50,878	39,343,870	45,823,607	46,510,481	7,537,848	2,162,866	12,309,415	61,424,927	1,273,298	2,648	2,384	85,213	3,090,704	281,841	905,875	29,463	475,944

AGRICULTURAL STATISTICS—Continued.

Counties.	Commercial Fertilizers.			Grapes and Wines.				Orchards.											
								Apples.		Peaches.		Pears.		Cherries.		Plums.		Other Small Fruits.	
	Pounds used during 1903.	Cost of fertilizers used during 1903.	Estimated pounds to be used during 1904.	Acres (new) vineyard planted 1903.	Whole number of acres in vineyard 1903.	Pounds of grapes gathered in 1903.	Gallons of wine pressed in 1903.	Acres occupied 1903.	Bushels produced 1903.	Acres occupied 1903.	Bushels produced 1903.	Acres occupied 1903.	Bushels produced 1903.	Acres occupied 1903.	Bushels produced 1903.	Acres occupied 1903.	Bushels produced 1903.	Acres occupied 1903.	Bushels produced 1903.
Adams	3,311,023	$29,029	2,477,031	3	3	....	....	2,222	42,483	129	42	25	600	7	43	1	12	6	80
Allen	415,300	3,734	80,500	1	27	1,230	25	2,105	29,064	27	50	8	264	4	8	4	219	16	824
Ashland	2,842,200	24,663	1,826,200	......	......	....	....	2,596	96,046	113	2,179	201	7,869	6	38	10	594	11	632
Ashtabula .	6,877,055	53,429	3,910,817	......	267	513,300	....	2,947	116,092	171	2,200	56	1,326	4	36	16	522	30	2,121
Athens	835,500	13,017	405,864	......	......	....	....	3,019	9,276	1,768	273	43	....	15	6	17	......	9	710
Auglaize ...	1,128,900	6,969	402,601	1	1	2,200	....	2,149	63,032	25	3	14	113	8	2	12	213	31	1,031
Belmont	1,817,200	18,206	792,375	15	31	122,000	1,483	4,299	58,297	205	173	51	692	31	31	44	347	177	7,661
Brown	1,965,797	21,630	1,121,605	602	610	2,850	225	2,121	53,919	41	67	....	....	....	......	......	......	......	......
Butler	750,050	7,489	302,400	......	5	5,802	2,000	588	11,206	58	66	8	95	10	22	5	32	26	1,235
Carroll	1,666,360	16,437	999,690	......	......	....	....	3,737	161,530	34	837	....	63	....	4	1	256	55	9,244
Champaign	2,723,700	23,458	341,170	4	5	2,000	50	1,359	65,841	24	105	10	798	2	11	2	80	10	473
Clark	1,693,050	65,562	622,400	1	4	2,050	....	1,218	51,632	36	61	23	199	21	130	34	674	170	7,785
Clermont ..	1,220,237	12,499	658,930	16	70	55,012	2,580	3,099	61,371	758	3,391	296	2,614	41	306	60	168	324	15,600
Clinton	2,665,690	26,173	1,244,200	......	......	....	....	1,639	54,025	18	42	13	253	2	72	1	737	1	25
Columbiana	3,543,110	37,004	2,753,780	......	......	1,100	....	6,056	279,917	185	573	18	571	7	83	17	2,205	240	13,693
Coshocton .	2,176,716	16,001	998,250	......	......	7,300	222	4,389	110,612	1,352	6,797	69	216	....	4	5	55	32	925
Crawford ...	1,915,280	16,965	1,218,520	1	4	14,610	246	3,346	163,177	13	1,474	5	747	1	43	16	613	11	1,146
Cuyahoga ..	3,995,200	44,251	3,310,400	26	2,570	4,815,350	29,933	4,050	337,743	85	2,056	112	8,109	28	893	95	6,069	754	44,350
Darke	1,591,600	13,624	339,850	4	1	3,625	58	3,759	136,171	12	25	16	745	3	180	8	412	50	2,045
Defiance ...	98,700	1,109	65,100	2	10	9,612	24	1,736	64,649	88	809	253	11,275	7	22	7	18	80	1,579
Delaware ..	1,160,280	9,906	555,470	......	......	....	....	2,439	82,858	....	....	....	....	....	......	......	......	......	......
Erie	2,104,000	13,309	792,000	46	1,157	1,718,500	21,050	1,617	130,298	962	29,935	45	2,459	16	330	55	2,017	90	6,326
Fairfield ...	4,101,710	45,515	2,578,190	......	62	40,760	445	3,578	161,051	6	135	10	166	1	10	3	282	156	9,611
Fayette	2,558,300	18,113	710,800	1	100	200	....	754	28,262	13	323	1	145	1	128	1	173	26	297
Franklin ...	2,479,900	12,144	394,150	2	9	19,400	59	3,025	142,552	17	183	20	825	6	35	39	763	35	2,333

Fulton	109,550	1,158	28,900	......	......	....	....	2,541	153,339	89	1,425	4	391	1	32	4	151	25	658
Gallia	1,122,850	7,800	272,401	1	......	1,200	....	5,475	6,962	361	188	55	....	9	......	14	......	76	1,522
Geauga	2,709,850	28,416	2,257,340	......	42	5,615	....	1,949	133,770	60	1,157	46	1,848	....	12	3	681	10	455
Greene	1,953,950	16,618	486,000	......	......	....	....	1,038	39,127	60	1,415	9	430	....	1	1	105	37	1,640
Guernsey	1,555,350	14,721	862,159	......	8	3,300	....	4,353	42,390	375	256	55	45	3	......	47	31	20	557
Hamilton	40,200	452	43,200	16	58	28,800	2,970	1,738	23,665	215	622	219	9,295	30	300	6	2	28	1,535
Hancock	666,000	7,292	281,500	......	2	4,250	20	3,567	125,730	70	982	6	397	1	42	11	1,001	31	953
Hardin	316,481	5,156	234,076	2	2	2,000	2,757	....	61,263	1	75	....	23	2	12	1	170	66	438
Harrison	832,385	7,296	103,675	1	1	5,000	....	2,891	47,080	129	547	2	73	3	261	4	115	19	1,025
Henry	74,900	848	43,100	......	9	3,125	85	2,828	105,934	23	1,351	....	124	1	99	2	128	31	1,375
Highland	6,835,633	47,192	2,386,421	......	......	....	5	2,993	107,430	61	30	1	100	11	......	......	......	1	......
Hocking	1,751,007	15,201	1,255,300	3	8	1,500	110	2,195	70,439	221	2,648	5	21	4	25	3	65	20	695
Holmes	1,894,100	17,821	1,147,250	7	8	770	141	2,974	152,052	74	2,633	4	166	....	18	7	284	25	1,136
Huron	3,899,270	41,875	2,916,996	......	......	....	....	3,185	192,347	148	1,638	17	414	1	2	8	1,272	32	1,030
Jackson	1,394,600	12,108	666,400	......	......	200	....	2,490	15,030	213	332	2	....	....	......	1	12	10	774
Jefferson	1,440,190	12,183	942,600	9	13	1,400	374	3,435	96,358	109	517	10	98	1	12	7	157	11	209
Knox	3,080,100	14,687	1,089,200	......	......	4,000	....	2,920	75,963	121	1,246	45	148	1	5	......	......	11	565
Lake	1,547,755	17,574	1,029,600	8	1,292	2,272,200	1,250	1,583	89,015	512	12,079	250	4,353	10	19	85	2,360	36	2,105
Lawrence	359,800	2,159	78,500	4	4	3,380	....	4,030	17,149	260	85	35	58	12	10	11	81	71	1,463
Licking	3,262,650	27,825	1,522,100	......	4	6,910	2	4,658	145,082	576	927	16	297	4	43	8	297	53	5,438
Logan	1,368,960	12,242	315,060	1	1	....	....	1,816	78,239	6	51	2	147	5	30	33	999	8	2,129
Lorain	5,895,890	43,365	3,113,665	19	1,001	1,922,716	6,676	3,267	193,970	150	4,437	36	1,801	6	100	38	1,113	116	6,808
Lucas	138,500	1,897	124,000	84	911	33,198	270	2,210	136,218	501	11,814	185	4,054	47	1,065	43	1,231	839	7,555
Madison	370,800	3,171	31,000	......	1	200	....	755	42,827	2	50	2	58	1	105	15	276	1	55
Mahoning	3,545,154	38,868	2,454,618	2	3	800	....	3,841	182,221	105	1,640	32	1,667	4	59	134	2,053	46	5,099
Marion	462,100	5,225	217,600	......	3	15,775	614	1,790	85,827	9	82	18	230	7	35	6	836	38	2,600
Medina	6,035,900	57,449	4,746,200	......	16	38,760	482	3,071	213,460	34	591	84	854	4	83	23	1,008	23	1,711
Meigs	1,698,610	16,750	692,776	7	8	6,670	25	3,288	6,061	668	157	33	35	10	......	31	222	144	4,347
Mercer	349,000	3,311	143,600	10	10	2,100	335	2,317	62,968	21	175	....	....	....	......	11	235	10	330
Miami	1,577,300	14,959	538,350	......	2	....	....	1,062	32,720	29	227	25	57	50	107	27	74	29	2,253
Monroe	2,053,550	21,162	1,305,850	1	1	1,560	925	4,629	44,092	15	66	2	20	2	10	3	47	1	31
Montgomery	3,512,400	32,649	2,183,008	2	50	5,006	600	1,985	81,298	23	74	48	1,271	13	135	6	262	96	3,555
Morgan	1,923,300	17,378	1,200,900	......	......	....	....	3,204	27,611	231	258	3	96	1	19	1	100	2	130
Morrow	2,796,490	20,957	1,652,742	......	......	....	....	3,096	123,800	1	75	....	....	....	......	......	......	8	748
Muskingum	2,908,100	27,060	1,676,860	1	1	1,200	....	4,553	90,405	906	2,519	61	202	2	......	9	167	42	2,377
Noble	1,104,354	10,702	589,350	......	......	....	90	3,184	31,783	156	93	....	....	2	15	10	73	19	940
Ottawa	2,000	32	5,000	29	1,863	5,843,775	144,105	1,827	91,895	8,581	229,390	94	4,881	3	153	231	10,423	80	745
Paulding	5,000	45	4,000	1	5	3,400	3	1,664	31,330	4	98	1	38	1	......	2	9	2	95
Perry	3,543,217	33,965	2,908,758	......	......	....	....	1,873	63,664	137	1,069	3	105	1	23	15	93	23	1,095
Pickaway	3,326,967	26,549	863,200	......	......	....	....	1,511	54,775	5	120	3	143	....	35	1	252	9	1,170
Pike	1,633,920	14,320	1,038,430	7	7	1,100	....	2,053	35,335	145	267	8	72	2	......	3	14	12	738
Portage	5,043,600	54,129	4,156,050	......	......	3,320	....	3,284	210,615	82	419	20	552	10	31	23	1,292	24	1,747
Preble	6,003,590	51,383	3,985,550	......	......	....	....	1,920	61,801	47	50	18	316	38	23	14	657	23	1,150
Putnam	5,500	600	2,200	7	28	2,850	250	2,696	89,844	11	1,345	13	146	2	69	6	404	2	38
Richland	2,979,240	27,541	1,604,100	......	9	13,550	....	4,071	184,214	207	2,143	84	3,713	13	17	58	1,323	40	2,278
Ross	3,136,759	26,009	1,023,086	5	9	6,375	150	2,511	61,718	901	592	23	25	15	80	21	137	54	2,269
Sandusky	506,750	4,447	498,752	605	1,007	4,000	50	3,032	184,355	365	18,851	11	325	124	1,617	9	397	22	1,610
Scioto	2,520,090	20,431	1,380,510	1	10	3,950	....	1,905	19,852	210	809	6	200	1	5	2	30	72	3,120
Seneca	4,194,650	36,318	1,983,900	10	153	2,725	230	2,741	136,046	99	4,540	2	103	4	3	3	35	14	1,095
Shelby	1,164,850	10,619	326,430	......	......	....	....	1,459	41,168	....	....	19	155	1	10	2	29	18	1,260
Stark	4,560,690	48,888	3,516,484	2	8	13,370	448	5,655	320,935	165	1,836	56	1,511	3	107	29	1,356	57	3,438
Summit	3,497,400	35,519	2,232,900	4	10	18,000	....	2,926	205,078	103	812	4	575	1	49	55	1,284	41	3,183
Trumbull	5,072,139	56,298	4,643,737	3	7	12,050	11	4,436	227,440	180	3,630	15	449	8	53	33	719	52	2,715

AGRICULTURAL STATISTICS—Concluded.

Counties.	Commercial Fertilizers.			Grapes and Wines.				Orchards.											
								Apples.		Peaches.		Pears.		Cherries.		Plums.		Other Small Fruits.	
	Pounds used during 1903.	Cost of fertilizers used during 1903.	Estimated pounds to be used during 1904.	Acres (new) vineyard planted 1903.	Whole number of acres in vineyard 1903.	Pounds of grapes gathered in 1903.	Gallons of wine pressed in 1903.	Acres occupied 1903.	Bushels produced 1903.	Acres occupied 1903.	Bushels produced 1903.	Acres occupied 1903.	Bushels produced 1903.	Acres occupied 1903.	Bushels produced 1903.	Acres occupied 1903.	Bushels produced 1903.	Acres occupied 1903.	Bushels produced 1903.
Tuscarawas	1,554,318	$13,849	1,221,400	......	4	14,100	155	5,728	265,698	276	4,339	4	56	5	31	21	725	11	1,135
Union	777,300	5,857	136,200	1	301	2,750	50	1,919	72,767	24	114	1	167	1	4	7	850	5	3
Van Wert .	....	....	....	......	4	2,020	20	2,106	43,580	6	171	7	139	4	65	8	333	5	75
Vinton	1,115,500	9,080	423,400	......	2	....	....	2,067	25,498	567	586	2	....	2	6	......	......	......	......
Warren ...	1,398,140	16,778	493,110	......	2	1,000	50	1,320	40,707	158	240	59	214	17	......	9	19	19	570
Washington	3,456,730	37,514	2,670,815	......	3	1,150	850	7,292	17,564	300	152	5	12	....	10	......	21	158	8,918
Wayne	6,537,870	63,306	5,379,240	......	5	21,400	370	4,384	254,577	86	1,580	47	1,202	4	595	19	711	22	3,538
Williams ..	164,200	1,590	18,700	......	2	10,380	101	3,857	147,781	10	96	4	140	....	......	1	48	4	430
Wood	387,100	3,669	93,150	......	52	28,450	240	3,500	189,678	133	6,295	30	879	22	480	29	755	84	1,513
Wyandot .	1,045,310	10,286	324,020	3	5	7,900	108	2,248	75,661	16	1,282	5	222	1	12	9	681	14	810
Totals..	189,857,217	$1,784,788	108,467,703	1,581	11,892	17,726,151	223,322	248,743	8,841,445	25,516	385,120	3,183	85,437	755	8,549	1,676	54,666	5,242	238,525

AGRICULTURAL STATISTICS—Continued.

Counties.	Lands Owned in 1903.					Horses.	Cattle.				Sheep.					Hogs.		Wool.
	Number of acres cultivated.	Number of acres pasture.	Number of acres woodland.	Number of acres lying waste.	Total number of acres owned.	Number owned in April, 1904.	Beef cattle owned in April, 1904.	Milch cows owned in in April, 1904.	All other cattle owned in April, 1904.	Total number owned in April, 1904.	Number owned in April, 1904.	Killed by dogs, 1903.	Value, 1903.	Injured by dogs, 1903.	Value, 1903.	Total number owned in April 1904.	For summer market, 1904.	Pounds shorn, 1903.
Adams	80.536	102,270	65,758	18,783	267,347	4,342	196	4,458	6.033	10.687	5.214	111	$409	49	$81	9,747	984	28,105
Allen	98,848	44.915	27,141	3,826	174,730	5,835	552	6,905	5,740	13,197	12.912	167	624	77	256	18,324	2,625	62,852
Ashland	135,539	39,596	32,658	5,310	213,103	5,848	580	6.602	5,949	13.131	28,805	235	971	108	145	15,819	2,511	206,233
Ashtabula ...	105,483	136,066	43,687	6,016	291,252	7,571	322	20,734	9,129	30,185	7,363	121	555	49	127	4.567	558	42.671
Athens	28,460	104,402	22,234	19,228	174,324	2,504	394	2,996	3,728	7.118	32.183	223	460	74	109	2,210	213	194,092
Auglaize	138,390	30,083	32,735	1,906	203,114	7,102	767	7,895	7,278	15,940	6,011	98	404	20	64	20,254	3,794	39,604
Belmont	70,440	116,945	30,697	13,498	231,580	5,179	398	7,924	6,599	14.921	51,444	267	760	622	385	7,651	615	407,696
Brown	88,932	132,691	24,837	11,052	257,512	5,787	206	6,291	5,832	12,329	5,768	208	697	68	239	22.868	2,367	33,552
Butler	145.265	34,709	19,285	12,404	211,663	8,261	647	9,562	5,495	15.704	5.856	118	582	87	353	22,868	4,138	35,948
Carroll	47,218	97,464	21,987	5.083	171,752	3,944	735	6,330	4,485	11.550	48.348	110	342	147	494	7,318	1,305	293,894
Champaign .	145,862	45,534	20,484	1,288	213,168	9,398	1,592	8,051	8,068	17.711	15.803	257	899	349	455	34,144	10,272	93,830
Clark	124,015	36,364	14,803	2,587	177,769	7,464	932	7,614	7.594	16,140	17,825	356	752	132	488	19,915	3,340	355,472
Clermont	89,603	81,399	17,883	15,281	204,166	5,468	422	7,065	1.736	9,223	2.611	79	304	34	650	9,598	1,656	12,079
Clinton	113,074	65,288	21,466	5,342	205,170	7,787	1,273	6,495	6.121	13,889	13.356	271	972	76	187	32,572	13,415	98,868
Columbiana .	120,692	76,350	35,771	5,599	238,412	7,144	667	13,149	5,625	19.441	21,203	942	986	169	289	20.007	2,599	112,175
Coshocton ...	72,217	145,056	42,766	4,694	264,733	5,368	469	6,829	8,607	15 905	70,346	406	1,270	225	541	11,612	1,645	505,728
Crawford ...	147,178	37,877	33,333	1,106	219,494	6,713	514	7,310	7.392	15,216	35,757	212	733	93	198	21,988	7,804	214,644
Cuyahoga ...	90,299	52,999	13,326	8,961	165,585	6,186	85	11,685	1.992	13,762	4.308	208	1.148	54	124	2,172	258	22,705
Darke	254,082	43,170	41,996	5,175	344,423	13,803	298	12,473	10,766	23,537	3,432	142	526	27	80	36,350	8,161	22,953
Defiance	122,282	22,269	34,374	1,058	179,983	4,862	203	6,199	3,048	9.450	11,805	76	368	9	30	13,819	3,090	66,422
Delaware	87,374	74,749	24,172	2,528	188,823	6,294	578	8,670	8,253	17,501	30,400	301	1,178	18	72	19,667	7,209	181,386
Erie	60,958	20,626	7,951	6,666	96,201	3,667	217	3,964	2,324	6,505	8.207	63	179	129	184	15,139	1,455	42,225
Fairfield	115,506	105,837	28,133	8,316	258,792	8,200	1,161	8,393	9,598	19,152	10,213	193	537	73	162	28,737	12,898	59,561
Fayette	61,867	74,202	10,591	1,679	151,279	6,458	4,021	4,231	6.519	14,771	6,645	113	134	17	39	26,662	7,625	36,189
Franklin	134,689	69,636	15,749	6,652	226,726	8,448	422	11,336	6,222	17,980	7,856	103	437	59	159	19,981	4,758	42,351
Fulton	120,008	23,611	24,457	649	168,725	6,056	685	8.694	5,729	15.108	12,202	70	265	140	233	23,147	9,924	70,011
Gallia	48,330	117,035	22,360	14,325	202,050	4,338	60	4.093	4.673	8,826	7,374	92	273	66	61	5,163	132	36,688
Geauga	65,276	81,572	31,948	1,339	180,135	4,291	265	14,854	4,767	19,886	4,444	81	316	47	100	3.658	1.126	27.535
Greene........	133,717	37,400	20,358	6,606	198,081	14,560	936	7,132	5,948	14,016	13,617	136	445	59	186	32,024	6,958	82,988
Guernsey ...	55,162	153,478	33,064	2,711	244,415	4,071	1,604	5,620	5,617	12,841	55,875	445	1,478	255	403	5,029	649	358.805
Hamilton ...	52,876	23,667	5,999	4.890	87,432	9,204	9,461	4,383	....	13,841	1,701	60	339	239	146.	9,169	1,805	6,210

AGRICULTURAL STATISTICS—Continued.

Counties.	Lands Owned in 1903.					Horses.	Cattle.				Sheep.					Hogs.		Wool.
	Number of acres cultivated.	Number of acres pasture.	Number of acres woodland.	Number of acres lying waste.	Total number of acres owned.	Number owned in April, 1904.	Beef cattle owned in April, 1904.	Milch cows owned in April, 1904.	All other cattle owned in April, 1904.	Total number owned in April, 1904.	Number owned in April, 1904.	Killed by dogs, 1903.	Value, 1903.	Injured by dogs, 1903.	Value, 1903.	Total number owned in April, 1904.	For summer market, 1904.	Pounds shorn, 1903.
Hancock	148,761	65,873	35,453	5,129	255,216	7,910	864	9,354	11,706	21,924	30,458	78	$284	42	$99	31,566	9,136	167,824
Hardin	118,551	44,973	23,077	2,997	189,598	5,112	1,167	5,549	7,037	13,783	19,134	232	572	278	739	33,122	4,515	153,483
Harrison	43,642	109,978	22,783	4,279	180,682	3,912	1,042	4,669	3,772	9,483	75,935	289	612	117	283	4,525	328	676,202
Henry	140,424	13,170	24,344	1,939	179,877	6,078	607	7,614	5,186	13,407	6,562	106	469	34	92	14,721	5,261	33,062
Highland ...	126,607	130,922	33,729	6,228	297,486	7,037	1,161	6.391	10,001	17,553	10,880	165	651	125	317	29,529	11,182	54,992
Hocking	38,861	103,939	37,313	9,299	189,412	3,096	571	3,497	4,933	9,001	13,385	361	974	263	377	5,232	508	77,642
Holmes	102,037	6,308	33,564	3,505	145,414	5,728	2,032	6,518	6,307	14,857	18,512	96	274	78	97	15,565	5,547	82,173
Huron	154,406	68,751	27,594	4,125	254,876	6,460	637	7,507	5,774	13,918	44,997	344	1,294	118	323	12,528	3,802	317,839
Jackson	44,121	110,091	21,687	4,949	180,848	2,712	484	3,511	5,667	9,662	4,715	158	417	52	69	3,363	2	24,159
Jefferson ...	70,524	87,311	30,981	10,354	199,170	3,838	525	5,868	4,030	10,423	41,698	411	1,308	173	326	5,111	230	227,873
Knox	104,765	117,502	34,779	1,130	258,176	6,263	812	7,591	7,905	26,731	86,883	128	342	80	131	17,792	2,914	670,670
Lake	45,401	32,609	12,545	4,100	94,655	4,374	82	5.716	1,853	7,651	3,520	160	573	33	85	2,061	134	18,053
Lawrence ...	30,093	54,699	26,416	19,625	130,833	2,300	263	2,804	3,680	6,747	1,241	59	185	10	27	3,155	38	3,323
Licking	120,196	193,187	39,073	3,971	356,427	10,236	1,177	12,738	14,503	28,418	86,848	598	2,203	142	241	27,540	10,752	566,531
Logan	141,752	59,579	27,263	1,747	230,341	7,888	1,210	8,022	7,550	16,782	23,909	402	1,290	212	490	21,612	6,825	161,867
Lorain	111,829	78,938	25,637	9,423	225,827	6,840	656	12,800	6,971	20,427	14,026	321	1,189	98	254	7.649	2,159	94,754
Lucas	63,437	10,817	9,672	7,603	91,529	4,597	339	6,907	1,585	8.831	1.534	49	196	25	97	7,724	1,383	8,314
Madison	118,898	88,230	11,298	1.729	220,155	7,579	1,503	5,438	10,893	17,834	14,158	152	493	264	463	30,763	11,416	49,084
Mahoning ..	93,333	72,186	22,538	3,059	191,116	5,737	510	11,033	6,304	17.847	15.569	309	1,129	106	257	7,460	535	98,461
Marion	94,441	55,542	15,280	695	165,958	5,670	840	5,261	6,412	12,873	35.371	337	1,047	139	280	25,430	7,378	260,585
Medina	115,175	77,646	35,157	3.950	231,928	6,936	449	10,906	5,168	16.523	19,775	164	665	168	313	9,623	2,239	122,864
Meigs	42,666	86,834	23.810	7,112	160,422	3,344	126	3,415	4,504	8.045	21.714	271	790	65	118	2,434	93	125,147
Mercer	141,708	39.883	40,674	4,824	227,089	8,063	522	8,037	8,399	16,958	7,946	66	388	58	225	26,551	6,555	45,935
Miami	124,261	16,065	11,263	3,069	154,658	8,198	895	6,335	4.713	11,943	1,795	49	225	30	99	17,997	2,886	7,357
Monroe	64,414	112,095	41.371	20.493	238,373	4,846	338	7,022	4,939	12,299	8.613	268	835	153	310	6,457	235	56,006
Montgomery	153,300	20.549	20,140	7,703	201,692	9,014	384	10.560	5,077	16,021	1,167	40	93	11	5	16,997	1,825	9,360
Morgan	41,646	130,033	27,928	8,834	208,441	3,941	327	4,411	6,595	11,333	51,504	451	1,393	457	613	4,586	626	330,456
Morrow	95,420	81,072	27,794	3,939	208,225	6,630	519	6,475	7,407	14,401	57,241	96	314	189	405	14,672	4,820	423,541
Muskingum .	73,753	153,312	47,236	6,747	281,048	6,503	756	9,370	11,553	21,679	74,671	798	2,252	406	630	9,671	857	461,199
Noble	64,458	135,688	22,532	5,940	228,618	4,112	808	5,139	7,379	13,326	44,335	249	768	89	166	5,773	907	280,199
Ottawa	78,205	18,058	9,913	5,299	111,475	4,376	279	4,893	2.919	8.091	4,158	54	192	16	34	7,267	977	23,954
Paulding	130,428	24,400	24,832	1,596	181,256	5,784	601	4,945	2,424	7.970	6,454	111	465	179	390	8,955	965	32,370

Perry	43,474	116,519	21,660	17,205	198,858	5,046	375	4,777	7,453	12,605	22,577	425	1,262	366	471	8,472	692	133,946
Pickaway ...	140,152	81,024	18,674	7,538	247,388	7,723	1,730	6,084	10,086	17,900	5,339	100	393	39	82	25,181	5,706	30,548
Pike	53,048	49,949	61,028	13,093	177,118	2,845	329	2,431	3,547	6,307	3,065	....	....	....	....	6,001	293	10,007
Portage	111,003	95,672	38,095	5,352	250,122	6,784	417	14,749	5,949	21,145	14,149	341	900	114	205	6,975	1,429	89,983
Preble	163,306	42,732	28,468	7,509	242,015	8,228	1,191	8,283	7,467	16,941	4,216	51	266	16	21	29,678	2,595	19,050
Putnam	155,114	27,494	31,046	4,605	218,259	7,629	580	8,613	8,005	17,198	7,338	198	778	123	384	26,298	4,496	45,510
Richland	158,081	40,096	41,108	4,722	244,007	6,573	447	9,290	6,451	16,188	32,466	204	705	76	157	21,082	3,203	182,576
Ross	103,845	100,717	41,746	29,163	275,471	7,337	782	5,039	9,771	15,592	6,942	249	930	77	255	21,907	3,721	26,820
Sandusky ...	125,440	23,787	20,479	6,454	176,160	6,856	511	8,005	5,129	13,645	11,565	44	174	16	19	17,071	2,313	73,734
Scioto	67,481	38,241	50,591	49,069	205,382	4,268	460	3,498	3,757	7,715	1,454	58	192	10	50	6,650	130	5,018
Seneca	183,673	36,687	32,893	1,863	255,116	7,562	258	9,424	6,935	16,617	29,545	261	956	64	200	25,814	6,882	179,776
Shelby	137,901	30,644	26,377	5,030	199,952	8,059	83	8,332	7,373	15,788	3,772	45	230	18	50	17,856	2,531	20,899
Stark	193,326	43,489	26,769	6,256	269,840	9,000	577	14,920	8,071	23,568	13,155	266	869	292	393	18,878	1,466	80,752
Summit	193,326	43,489	26,769	6,256	269,840	9,660	196	12,036	5,765	17,997	4,311	169	582	46	156	8,158	709	29,015
Trumbull ...	103,780	145,192	45,551	8,533	303,056	7,521	319	18,276	9,382	27,977	12,210	275	2,972	189	1,493	5,687	688	71,316
Tuscarawas	98,080	114,107	41,187	11,519	264,893	6,072	915	11,298	8,111	20,324	24,306	468	1,658	228	695	11,089	1,339	144,615
Union	108,242	84,287	25,180	1,016	218,725	7,284	681	7,133	7,744	15,558	27,664	171	774	81	224	29,797	6,306	182,522
Van Wert ..	155,439	23,423	27,118	1,490	207,470	6 487	453	6,075	4,946	11,474	9,066	133	625	77	197	21,325	4,115	41,512
Vinton	33,102	78,348	39,014	14,925	165,389	2,025	123	2,233	3,591	5,947	15,250	280	729	184	179	2,219	36	92,981
Warren	138,254	48,873	24,727	7,079	218,933	7,596	508	8,250	5,072	13,830	5,073	221	746	24	32	19,012	1,834	27,879
Washington .	90,336	128,164	46,740	17,421	282,661	5,421	283	7,068	6,398	13,749	21,745	251	868	194	244	5,933	364	144,973
Wayne	185,818	39,865	31,766	4,532	261,981	9,231	1,106	11,600	8,630	21,336	13,504	102	403	52	179	29,708	7,299	90,103
Williams	170,407	63,957	27,258	1,175	262,797	5,820	401	6,855	6,479	13,735	22,178	188	767	241	494	22,863	6,532	164,225
Wood	188,964	35,407	25,300	4,809	254,480	9,401	2,329	10,029	6,792	19,150	13,682	260	641	91	213	31,280	9,047	52,661
Wyandot ...	123,077	57,401	24,708	4,557	209,743	5,865	393	5,840	6,493	12,726	50,617	137	495	74	185	23,695	1,520	320,515
Totals...	9,340,149	6,225,455	2,484,891	632,113	18,682,608	558,487	68,625	678,731	553,440	1,300,796	1,782,121	18,543	$62,140	10,413	$21,973	1,397,910	318,165	11,762,687

DOMESTIC ANIMALS DIED FROM DISEASES IN 1903.

Counties.	Horses.		Cattle.		Sheep.		Hogs.	
	Number.	Value.	Number.	Value.	Number.	Value.	Number.	Value.
Adams	114	$5,995	166	$3,219	416	$ 628	340	$1,722
Allen	95	8,250	105	2,768	311	1,274	3,318	13,757
Ashland	107	10,891	139	3,604	772	2,289	411	2,171
Ashtabula	98	5,995	285	8,487	217	733	145	1,095
Athens	41	2,617	83	1,845	291	758	108	645
Auglaize	148	10,135	221	4,674	323	1,243	7,594	36,633
Belmont	110	5,785	166	3,462	592	1,331	360	2,032
Brown	161	9,120	229	5,333	277	890	835	4,810
Butler	151	9,260	254	5,798	333	1,350	1,762	8,910
Carroll	66	4,737	99	2,478	207	471	87	601
Champaign	165	14,880	232	5,497	445	1,443	3,279	18,621
Clark	211	11,681	239	5,270	493	1,640	2,014	9,975
Clermont	261	7,959	325	3,743	82	298	507	1,576
Clinton	124	7,980	183	4,480	453	1,481	1,944	8,337
Columbiana	144	11,213	227	6,558	285	969	169	1,372
Coshocton	76	5,172	170	3,448	441	1,110	165	1,091
Crawford	116	9,001	145	3,465	803	2,389	6,504	32,209
Cuyahoga	150	8,980	245	7,552	333	1,205	235	1,557
Darke	296	21,290	436	10,339	252	1,274	3,153	17,708
Defiance	113	8,100	138	3,001	356	1,360	1,183	4,861
Delaware	120	9,000	215	4,708	586	1,690	614	2,945
Erie	87	6,540	68	1,437	185	785	182	935
Fairfield	146	10,314	237	5,610	302	1,228	1,389	7,102
Fayette	138	8,950	157	3,995	251	809	3,416	13,194
Franklin	206	14,060	291	8,041	225	1,433	2,952	14,104
Fulton	125	10,420	185	4,913	408	1,606	1,235	5,700
Gallia	109	5,242	120	2,425	288	731	162	1,005
Geauga	84	5,210	246	9,315	344	1,003	121	1,173
Greene	152	10,292	142	3,578	346	1,239	1,378	6,027
Guernsey	72	5,775	94	2,432	799	1,605	146	929
Hamilton	104	3,785	198	3,940	79	232	646	1,955
Hancock	109	9,098	209	5,408	829	2,661	1,739	8,475
Hardin	136	10,487	245	4,804	387	1,490	4,406	20,620
Harrison	61	5,260	64	1,902	303	648	29	229
Henry	193	15,220	225	5,632	325	1,173	4,476	17,642
Highland	112	6,726	174	3,433	335	1,066	902	4,641
Hocking	61	3,566	145	2,605	296	761	169	1,240
Holmes	94	6,646	148	3,174	531	1,638	461	2,055
Huron	110	7,263	140	3,771	862	2,413	1,972	9,078
Jackson	67	2,482	97	1,273	213	419	78	490
Jefferson	66	4,435	117	3,046	313	725	160	1,084
Knox	106	8,150	167	4,637	849	2,513	383	1,255
Lake	25	2,050	44	1,271	71	203	48	291
Lawrence	68	3,525	171	2,634	45	152	159	1,074
Licking	207	13,550	413	6,758	1,573	3,983	1,138	3,923
Logan	173	13,490	231	5,356	508	1,943	2,466	11,048
Lorain	104	8,120	154	4,966	290	865	172	1,338
Lucas	97	5,945	127	3,512	77	326	570	2,682
Madison	169	13,997	212	6,331	313	1,095	8,551	38,101
Mahoning	78	5,525	206	5,634	246	705	159	1,310
Marion	116	9,199	168	3,622	735	1,895	1,330	5,847
Medina	198	9,996	160	4,868	568	1,804	190	1,416
Meigs	60	3,125	85	1,293	311	661	83	469
Mercer	163	11,961	214	5,116	310	1,473	3,747	19,240
Miami	134	9,920	193	4,738	73	288	895	5,220
Monroe	104	7,345	140	2,867	126	335	142	971
Montgomery	220	16,331	310	7,564	77	293	1,866	10,734
Morgan	80	4,675	161	3,421	530	1,042	102	812
Morrow	149	13,375	241	4,829	681	1,782	268	1,654
Muskingum	184	10,255	272	5,365	710	1,442	295	1,828
Noble	58	4,440	113	2,155	243	394	65	510
Ottawa	49	3,080	70	1,683	87	510	261	1,174
Paulding	167	11,553	152	3,915	308	969	13,855	73,686
Perry	111	5,224	121	2,805	212	545	116	936
Pickaway	186	14,425	187	4,813	253	1,084	2,694	10,341
Pike	87	4,590	78	1,547	139	445	369	2,100
Portage	169	10,855	334	10,239	510	1,435	251	1,506
Preble	153	9,695	228	5,141	310	1,147	1,376	8,111
Putnam	189	15,286	275	6,608	544	2,165	10,716	52,486
Richland	160	14,019	181	3,956	1,018	2,787	557	3,678
Ross	178	11,075	210	5,182	127	445	1,226	5,263
Sandusky	141	10,505	181	3,600	365	1,114	520	2,910
Scioto	127	6,726	142	2,624	68	194	235	1,397
Seneca	175	13,535	221	5,803	1,082	4,603	2,342	12,373

DOMESTIC ANIMALS DIED FROM DISEASES IN 1903—Concluded.

Counties.	Horses.		Cattle.		Sheep.		Hogs.	
	Number.	Value.	Number.	Value.	Number.	Value.	Number.	Value.
Shelby	159	$10,230	183	$4,091	148	$647	1,954	$8,504
Stark	251	16,221	374	8,280	510	1,476	840	5,283
Summit	87	6,576	242	7,310	163	525	244	1,620
Trumbull	305	8,390	313	9,481	309	978	191	1,253
Tuscarawas	160	11,595	178	4,206	363	864	234	1,494
Union	142	12,240	156	4,578	547	1,795	3,125	13,496
Van Wert	145	12,606	200	4,940	488	1,928	3,786	16,909
Vinton	59	3,270	104	1,921	365	761	96	699
Warren	169	9,780	200	4,753	135	510	3,287	15,691
Washington	131	6,690	147	3,006	295	693	141	949
Wayne	198	19,084	221	5,385	752	2,351	454	2,637
Williams	143	10,745	140	3,933	1,040	4,345	2,101	11,889
Wood	253	21,415	299	7,904	590	2,000	2,479	11,638
Wyandot	122	9,320	120	2,798	1,418	4,005	1,256	66,533
Totals	11,868	$803,556	16,643	$395,902	36,371	$113,006	137,490	$734,585

TABLES OF COMPARATIVE STATISTICS AS COMPILED BY THE SECRETARY OF AGRICULTURE

COMPARATIVE TABLE SHOWING PRODUCTION OF WHEAT IN OHIO FOR TEN YEARS.

Counties.	Number of Bushels.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Adams	148,545	178,584	150,417	125,325	218,156	304,058	241,235	97,769	199,065	340,920
Allen	324,217	524,268	473,816	49,611	560,722	400,588	328,024	318,955	451,775	540,700
Ashland	526,045	534,061	386,185	199,992	602,971	521,222	597,622	274,753	343,502	640,105
Ashtabula	134,833	154,276	121,544	51,554	241,819	291,870	200,208	69,913	132,485	224,074
Athens	93,066	87,075	108,126	128,315	151,795	181,279	202,247	191,676	130,891	178,271
Auglaize	487,651	862,655	697,791	26,310	775,151	509,909	309,480	365,547	566,304	767,327
Belmont	274,261	299,477	237,777	174,399	274,604	356,622	406,539	331,471	261,776	383,747
Brown	149,303	178,585	176,357	130,315	259,818	353,060	251,883	94,296	290,175	383,181
Butler	707,537	1,103,105	818,415	237,830	108,176	1,065,347	916,826	258,458	513,739	956,238
Carroll	198,306	204,374	183,182	80,854	207,543	274,745	250,066	138,622	122,356	239,344
Champaign	458,138	623,121	524,919	44,697	783,253	648,804	514,096	275,079	437,118	974,493
Clark	399,583	587,708	422,764	54,618	806,942	625,155	539,361	319,384	442,127	749,065
Clermont	100,295	113,865	117,341	74,808	192,979	269,413	162,288	49,276	216,692	296,308
Clinton	459,657	526,598	348,227	33,690	687,147	572,322	498,287	105,842	367,423	704,341
Columbiana	360,164	347,311	469,590	205,112	320,530	423,274	431,575	220,331	166,151	398,901
Coshocton	303,451	353,663	226,829	68,657	338,998	437,704	550,925	131,234	243,994	496,591
Crawford	401,127	499,291	364,681	144,479	650,523	453,157	482,632	195,693	344,773	512,106
Cuyahoga	141,496	199,345	212,816	72,019	202,621	219,437	162,382	79,742	141,978	226,981
Darke	815,840	1,253,069	1,180,245	2,137	1,351,096	1,065,613	774,220	572,758	796,963	1,462,139
Defiance	150,951	218,495	369,932	197,867	207,468	377,332	252,654	284,279	452,197	426,500
Delaware	124,857	136,167	131,695	50,637	479,210	279,892	208,277	62,604	159,482	353,012
Erie	243,747	347,229	265,323	61,513	388,458	354,051	414,918	182,373	237,095	379,368
Fairfield	585,493	591,968	399,879	82,395	677,034	736,986	679,559	222,234	406,864	741,640
Fayette	425,866	611,380	442,129	20,516	958,175	637,272	646,045	105,151	351,526	614,692
Franklin	346,855	453,293	409,985	64,551	716,942	598,842	563,884	70,477	363,176	643,579
Fulton	173,507	204,034	289,448	149,010	82,381	512,947	365,356	322,780	436,418	442,658
Gallia	**116,478**	85,019	131,520	199,466	216,132	268,480	242,274	203,417	192,651	261,210
Geauga	115,501	120,182	98,753	32,643	173,755	201,198	156,257	59,990	66,521	150,568
Greene	593,092	859,786	549,071	86,913	850,817	709,532	616,485	37,382	620,807	959,893
Guernsey	143,339	146,679	166,050	67,459	205,903	261,054	277,848	192,155	162,376	246,724
Hamilton	425,715	466,168	238,394	114,346	294,745	289,073	260,505	48,290	168,583	259,224
Hancock	509,804	867,477	776,659	88,553	946,112	759,325	626,425	401,044	695,428	914,310

Hardin	303,581	469,907	498,913	76,888	620,912	396,011	289,929	219,319	342,280	506,589
Harrison	161,842	196,065	157,152	70,144	159,877	226,375	234,257	159,966	143,405	236,853
Henry	335,378	372,963	475,426	310,478	207,346	676,004	518,881	464,426	583,984	652,101
Highland	323,171	602,026	250,277	20,649	413,624	549,559	535,638	141,729	352,977	594,279
Hocking	129,578	112,283	79,579	33,972	158,223	218,415	189,996	200,905	108,986	148,365
Holmes	456,296	439,892	360,488	210,686	457,884	435,711	449,842	147,498	265,621	325,125
Huron	475,545	667,678	552,005	76,904	781,246	506,725	541,346	300,953	423,678	561,280
Jackson	67,904	50,162	64,235	85,555	134,424	163,863	141,424	109,462	116,945	165,213
Jefferson	183,173	216,457	179,125	117,194	177,028	272,035	293,037	243,564	151,436	259,595
Knox	429,047	326,189	249,389	209,751	526,682	543,823	621,728	166,459	301,897	553,667
Lake	53,527	64,341	45,683	14,274	100,367	107,577	91,714	56,076	56,733	101,012
Lawrence	31,141	35,903	70,037	73,565	101,183	97,307	67,438	51,028	82,561	129,050
Licking	442,639	319,634	223,336	32,001	615,650	634,725	416,127	188,523	276,716	715,916
Logan	372,444	609,775	500,450	45,119	739,302	414,629	328,759	218,496	253,941	610,978
Lorain	356,840	408,819	335,170	100,296	402,773	393,995	409,387	173,616	265,535	404,275
Lucas	122,761	193,038	204,711	160,815	46,565	332,367	262,385	196,192	198,909	248,477
Madison	136,341	239,983	302,144	28,197	891,327	655,771	420,933	48,078	256,573	673,334
Mahoning	274,480	255,104	245,291	111,987	231,788	326,816	408,650	119,012	117,701	303,894
Marion	222,556	380,462	244,409	94,822	605,021	350,654	323,423	136,513	251,082	523,426
Medina	383,886	431,984	398,232	135,949	311,808	452,860	429,131	119,134	289,969	449,172
Meigs	135,563	125,041	133,353	220,452	237,695	264,098	287,824	229,454	205,729	274,612
Mercer	450,140	565,285	595,153	9,029	766,255	446,749	367,945	360,080	556,136	764,392
Miami	619,491	957,574	747,099	99,305	876,799	861,354	668,198	565,799	496,159	1,082,571
Monroe	215,103	184,316	125,685	133,306	229,907	241,937	272,828	219,341	201,800	268,166
Montgomery	616,037	905,662	613,810	116,630	859,863	812,677	564,339	373,714	450,381	893,754
Morgan	141,511	112,575	141,974	111,445	234,544	206,117	228,180	256,094	209,280	231,053
Morrow	276,293	218,659	118,317	112,168	434,262	288,895	241,085	155,373	171,021	272,213
Muskingum	283,998	288,752	253,727	102,953	367,125	464,467	429,171	289,245	241,458	421,218
Noble	154,181	134,789	136,422	106,294	164,328	171,001	232,364	175,716	193,106	223,755
Ottawa	171,418	328,997	282,899	121,325	184,651	326,944	323,890	189,782	304,214	321,063
Paulding	153,925	241,148	354,369	356,381	74,659	302,566	120,950	205,530	395,159	280,151
Perry	181,779	183,569	145,070	33,073	252,250	329,685	306,435	233,332	193,292	262,864
Pickaway	634,030	885,657	685,119	114,004	994,225	800,881	951,527	167,063	628,283	995,617
Pike	94,178	108,481	141,117	112,698	203,170	258,229	228,109	138,219	202,996	275,604
Portage	348,747	362,178	303,799	192,354	370,435	457,506	370,609	130,141	179,519	372,139
Preble	531,004	1,061,637	649,550	1,647	952,659	922,193	601,159	459,883	568,561	922,364
Putnam	525,643	696,675	651,576	300,305	879,735	643,313	561,813	444,928	730,761	862,626
Richland	607,350	553,359	471,923	221,532	690,417	615,171	617,176	316,239	423,980	627,919
Ross	462,762	572,107	454,629	132,849	634,346	760,329	771,331	328,800	464,813	883,977
Sandusky	449,398	665,273	533,444	71,472	1,188,685	697,025	740,777	472,128	677,338	873,048
Scioto	130,278	147,060	193,688	244,817	246,556	288,828	263,914	152,346	153,666	247,476
Seneca	723,383	1,052,977	839,966	83,566	1,089,356	891,059	874,190	470,361	766,315	1,065,511
Shelby	450,296	805,963	646,641	6,407	713,427	505,042	351,181	321,904	452,382	786,867
Stark	891,259	978,880	784,088	571,534	775,863	993,695	900,724	299,291	447,385	903,250
Summit	427,288	488,085	404,454	304,516	535,302	614,415	525,724	241,912	247,642	530,332
Trumbull	207,609	188,209	180,176	68,465	274,151	296,383	245,415	55,433	122,770	255,749
Tuscarawas	408,564	417,197	245,283	63,053	374,922	515,940	500,700	201,480	299,399	503,875
Union	170,175	230,449	278,924	45,962	526,909	292,458	298,462	41,869	160,091	393,961
Van Wert	322,420	471,458	532,395	209,572	531,494	559,256	365,988	455,580	618,318	703,355
Vinton	58,961	58,714	43,520	50,452	101,428	134,096	107,085	88,650	78,035	106,679
Warren	358,854	446,659	332,929	54,288	456,352	529,844	411,365	44,267	346,980	585,264

COMPARATIVE TABLE SHOWING PRODUCTION OF WHEAT IN OHIO FOR TEN YEARS—Concluded.

Counties.	Number of Bushels.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Washington	251,281	221,023	196,019	244.163	411,392	394.084	417,713	425.406	399.742	482.794
Wayne	900,144	926,362	708,096	565,707	789.228	867,836	945,872	306.584	483.730	1,117.768
Williams	231,349	235,624	291,612	57,657	304.170	352.437	286 815	221.835	367.543	445,074
Wood	453,687	562.169	621,036	321.605	507.902	796.772	724.633	505,318	638.653	805,540
Wyandot	335,328	391,401	386,599	88.332	607.221	423,694	418,757	221,762	329,670	533,212
Total product	29,074,367	36.901,212	31,150,373	10,866,155	41,469,703	41,041.671	36,718,683	19,511,788	28,759,647	45,587,534
Total area	1,981,573	2,054,588	2,176,723	2,468,280	2,957,616	2,637,788	2,273,712	2,574,364	2,483,855	2.429,082

Average area for 10 years, 2,403,758 acres.
Average product for 10 years, 32,108,113 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF BARLEY IN OHIO FOR TEN YEARS.

Counties.	Number of Bushels. (Includes Fall and Spring Barley.)									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Adams	....	....	200	....	....	....	130	....	36	519
Allen	4,237	14,139	14,391	17,937	1,742	2,757	3,854	1,662	1,216	532
Ashland	2,651	3.317	3,582	2,037	3,758	2,798	3.640	3,222	4.274	8.647
Ashtabula	636	1,283	764	953	720	962	1,637	1,489	1,538	1,807
Athens	....	....	....	....	....	....	....	....	6	....
Auglaize	512	3.527	6,517	8,227	2,919	3,304	6,590	21,324	31,715	26,478
Belmont	78	431	509	472	542	1,381	1,429	1,547	1.962	1,481
Brown	20	2	72	36	26	....	....	40	....	....
Butler	35,196	56,519	33,399	8,680	25,665	20,695	62,521	56,595	153,324	119,361
Carroll	45	....	51	286	141	36	55	76	120	124
Champaign	2,060	1,394	5,859	10,153	3,841	1,345	640	430	824	1,756
Clark	620	2,121	2,672	2,868	2,399	144	569	1,247	6.535	8,205
Clermont	8	....	20	....	394	140	8	....	219	36
Clinton	90	3,155	1,910	681	1,390	585	1,110	338	1,012	2.831
Columbiana	65	255	242	420	455	700	503	345	335	367
Coshocton	118	453	1,437	884	562	279	15	125	14	18
Crawford	1,944	3,344	3,261	2.434	2,443	5,179	4.668	5,827	3,689	6,319
Cuyahoga	262	658	297	1,198	40	530	194	51	....	497
Darke	2,516	5,320	11,936	21.780	7.521	14,860	13,473	32,088	31,212	50,109
Defiance	52,472	83.678	48.737	43.279	42.213	27,287	21,679	18,594	17,928	15,718
Delaware	....	292	1,502	1,105	1.240	....	200	25	....	....
Erie	6,555	10,674	11,549	9,878	7.768	16,019	18,392	13,394	19,116	28,783
Fairfield	1,335	1,650	1,534	1,059	1.227	460	895	2,144	1.323	1,372
Fayette	140	1,045	7,903	2.785	1.969	172	466	....	206	300
Franklin	340	167	1,067	1,008	71	....	1,000	32	24	1,739
Fulton	29,123	32,189	14.146	34,268	29,568	12,432	6,962	5,118	9,396	3.193
Gallia	....	....	25	7	....	10	3	....	....	....
Geauga	160	758	850	892	567	237	198	63	174	159
Greene	96	1,203	1,236	2,219	772	395	2,254	225	6,158	7,378
Guernsey	75	225	32	15	230	270	829	1.063	41	337
Hamilton	4.820	6,167	3,331	1,856	2,627	4.251	14,597	7,056	32,062	80,933
Hancock	4,380	16,385	34,969	43,814	12,156	5,768	4,032	4,933	4,565	2,400
Hardin	1,414	5,254	7,896	2,829	468	250	336	....	50	122
Harrison	....	....	47	724	1,066	1,204	1,170	460	260	159
Henry	88,753	127,350	65,137	95,467	91,119	42,163	40,834	20,785	13,096	7,468
Highland	500	1,241	823	440	360	....	26	464	1,189	894

COMPARATIVE TABLE SHOWING PRODUCTION OF BARLEY IN OHIO FOR TEN YEARS—Concluded.

Counties.	Number of Bushels. (Includes Fall and Spring Barley.)									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Hocking	....	....	113	....	....	10	....	97	....	308
Holmes	....	887	1,499	890	342	638	1,161	736	829	1.689
Huron	1,285	3,946	5.731	2,563	4,055	9,973	8,828	4,933	5,552	10,597
Jackson	200	....	18	....	....	5	....	....	4	....
Jefferson	260	527	516	652	1,137	1,142	1,623	1,317	141	1.184
Knox	178	540	220	935	1,583	530	84	211	1,462	449
Lake	1,234	632	1,613	3,610	1,148	314	417	690	2,728	2,950
Lawrence	....	140	....	....	....	....	....	48	....	....
Licking	620	800	3.055	412	116	245	684	....	109	3.490
Logan	2.533	4,731	8,237	3,777	1.127	855	2,215	1,811	2,321	8.521
Lorain	1.125	1,641	1,911	1,640	2.246	2.303	742	518	1,216	2.810
Lucas	16,130	19,135	10,100	10,735	14,985	10,965	8,544	8,461	6,968	6.043
Madison	800	1,727	8,914	10,746	567	250	305	60	389	1,600
Mahoning	....	473	110	182	193	540	49	230	93	417
Marion	200	533	648	1,300	197	859	92	460	578	1.045
Medina	438	1,447	2,064	5,745	4,100	2,372	1,098	57	200	22
Meigs	....	60	28	19	12	....	628	1.000	862	1.274
Mercer	15,439	37,330	38,204	25,180	10.337	6.350	5.463	26,828	41,492	39,343
Miami	....	420	2,573	6,102	2.277	3,346	4,119	12,296	13,661	21,575
Monroe	100	93	20	67	7	....	....	....	....	10
Montgomery	1,670	3,120	4,722	581	3,741	2,987	9,460	14,026	30.299	33,480
Morgan	....	30	24	....	85	65	2	41	61	151
Morrow	....	576	101	121	35	....	....	84	464	181
Muskingum	740	623	1,052	333	83	200	225	1,459	1,467	3,209
Noble	....	....	121	....	4	....	100	50	425	60
Ottawa	59,467	57,332	55,881	31,845	30,756	48,883	52.933	61.266	47.118	27,782
Paulding	140,450	91,805	241,388	220,751	135,305	74,924	32,166	6,611	2,546	862
Perry	....	450	200	....	135	25	....	80	87	251
Pickaway	....	253	1,840	5.262	125	....	1,200	....	1,300	627
Pike	....	....	101	2.100	50	....	660	....	....	192
Portage	436	157	68	390	35	320	....	156	1,621	609
Preble	277	1,840	1,963	860	1,235	1,785	2,046	8,087	12,878	23.155
Putnam	52,639	92,542	75,374	115,796	38,733	33,158	29,547	9,386	6,668	5,604
Richland	2,164	4,976	4,720	3,469	3,831	5,088	5,873	7,412	10,332	18,907
Ross	20	1,190	2,210	591	20	....	400	15	3.961	3,491
Sandusky	7,904	9,257	7,783	12,175	2,982	5,246	5,425	4,566	7,244	9,064
Scioto	....	....	93	....	42	320	1,105	500	1,249	195

Seneca	1,358	4,724	13,015	31,047	3,789	2,285	780	151	3,352	1,061
Shelby	21	1,374	2,401	2,532	2,970	4,302	8,001	33,919	60,875	42,373
Stark	199	351	1,582	1,475	728	1,429	806	899	1,897	1,657
Summit	840	781	321	293	206	1,068	776	450	415	491
Trumbull	128	432	50	296	36	....	75	16	214	175
Tuscarawas	....	100	70	343	92	362	1,162	51	56	182
Union	600	1,181	8,878	9,706	577	234	118	....	26	3
Van Wert	123,249	241,963	210,156	194,011	76,855	32,271	41,948	10,410	9,143	7,110
Vinton	....	....	....	11	....	....	250	....	....	....
Warren	10,015	17,287	12,456	7,822	8,126	9,830	12,217	9,931	30,365	16,895
Washington	54	25	....	....	5	28	....	301	....	....
Wayne	1,080	1,651	1,641	3,232	1,115	1,615	3,015	689	1,116	934
Williams	40,536	42,679	143,919	55,597	68.935	43.512	11,547	10,164	6,297	3,483
Wood	81,891	114,428	169.092	126,214	78,639	62,237	42,991	21,091	12,622	18,404
Wyandot	5,775	960	2.059	2,099	955	388	516	....	370	610
Total product	813,581	1,351,345	1,336,128	1,224,198	752,633	539,812	519,305	462,859	676,383	715,570
Total area	38,817	45,776	54,428	41,939	26,684	20,254	21,008	32,563	43,313	32.179

Average area for 10 years, 35,696 acres.
Average product for 10 years, 839,181 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF RYE IN OHIO FOR TEN YEARS.

Counties.	Number of Bushels.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Adams	3.075	6,551	10,305	2.118	808	2,649	6.914	2.410	2.381	1,851
Allen	2.939	9,031	18,065	3,078	2,364	2,562	3,635	6,242	7,275	8.415
Ashland	5,519	8,961	10,916	2,964	1,353	2,935	13,216½	4,951	3,270	2,865
Ashtabula	12,115	21,123	23,362	5,411	4,985	6,671	8,288	6,214	10,454	12.018
Athens	555	1,042	933	451	440	....	1,835	2,606	1,167	134
Auglaize	2,184	6,306	27,524	3,038	1,731	3,600	5,629	4,709	4,739	7,711
Belmont	2,212	2,652	2,201	1,025	854	1,529	9,206	17,825	5,756	3,822
Brown	13,146	15,377	19,406	4,910	1,838	4,501	12,668	4,432	8,346	4.994
Butler	3,768	5,861	8,918	2,380	472	886	6,298	1,800	2.212	3,347
Carroll	482	1,816	2,949	803	528	2,277	6,454	3,074	2,034	1.834
Champaign	4,559	10,768	32,456	8,184	1,630	2,018	4,463	1,815	2,881	5.771
Clark	5,403	7,979	23,003	11,157	5,239	2,174	9,406	11,732	13,623	16,788
Clermont	9,170	19,916	35,940	12,626	6,589	9,462	10,649	4,011	13,968	10,816
Clinton	6,716	10,098	11,235	3,081	1,771	3,852	8,403	2,269	1,847	2.193
Columbiana	2,401	3.832	5,318	2,368	1,249	2,502	7,634	3,648	3,372	3.778
Coshocton	1,783	9,857	13,941	2,333	1,710	5,562	26,262	11,619	8,606	4.935
Crawford	1.036	4,515	2,137	379	473	1,519	3,784	1,235	5.579	5.697
Cuyahoga	9,482	14,557	25,166	8,790	5,658	9,265	15,982	9,038	12,520	22.729
Darke	3,455	7,160	36,384	6,568	4,470	8,735	16,759	15,950	10,198	16.612
Defiance	1,377	3.285	17,954	5,299	1,546	2.221	3,226	6,183	11,584	6.986
Delaware	6,971	12,293	8,403	2,236	1,067	2,343	3,273	1,880	2,295	2,986
Erie	4,044	10,424	20,771	6,304	2,260	3,883	13,591	12,477	12,656	10.682
Fairfield	5,086	12,433	33,708	4,401	1,789	3,853	15,157	7,189	4,061	3,203
Fayette	1,708	3,148	21,142	1,448	1,391	1,342	11,725	5,466	7.154	5.255
Franklin	12.556	18,146	32,171	7,055	2,783	3.581	21,017	4,271	3,658	3,169
Fulton	11,229	15,901	17,651	1,721	2,694	6,498	10,546	16,193	15,973	10,702
Gallia	3,412	1,747	760	519	238	1,024	2,121	1,403	1,446	491
Geauga	2.640	5,482	4,848	456	278	1,829	5,335	2,415	1,437	1.830
Greene	3,673	10,435	11,803	2,870	1,790	1,289	8,228	4,091	7,242	9,254
Guernsey	1,554	4,132	14,161	2,154	639	1,551	6,524	4,073	1,801	2,114
Hamilton	11,030	12,824	22,221	12,829	7,743	12,000	17,581	3,460	12.753	13,162
Hancock	4,328	10,953	48,919	6,980	3,044	3,887	6,529	6,173	17,601	17,067

Hardin	5,361	22,136	15,936	9,247	1,853	3,612	3,527	2,825	3,087	8,477
Harrison	177	981	1,875	557	291	559	1,414	1,501	1,403	892
Henry	27,217	62,212	109,447	79,586	23,478	43,195	58,383	67,203	74,818	111,350
Highland	2,528	16,230	29,452	2,935	1,108	3,702	19,533	4,778	5,362	3.879
Hocking	2,188	3,606	10,173	1,512	302	1,840	2,157	1,740	1,097	1,314
Holmes	3,647	8,058	8,718	2,358	1,130	7,042	17,048	6,322	7,495	7,500
Huron	330	4,527	23,082	2,077	1,656	2.851	8,907	3,697	6,816	5.587
Jackson	664	1,029	1,456	710	192	146	802	1,036	384	100
Jefferson	537	1,529	2,386	659	199	410	2,731	4,814	1,521	741
Knox	7,403	19,264	12,516	1,643	874	5,032	20,500	7,931	5,467	3.019
Lake	9,165	13.373	18,061	7,951	6,204	5,073	10,830	12,884	12,658	17.833
Lawrence	205	147	448	319	70	264	454	615	934	782
Licking	18,433	44,201	34,956	5.262	4,159	12,721	37,155	22,547	9,617	5.394
Logan	11,035	20,789	24,548	4.270	2,109	4,267	7,037	5,015	5,287	8.614
Lorain	3,825	2,845	9,795	1,146	391	1.245	7,570	5,179	4,329	4.529
Lucas	9,748	20,835	30.349	15,453	5,122	11,029	22,263	24,206	37,140	28,777
Madison	7,916	15,168	32,421	3.890	1,206	355	7,725	3,008	4,765	7,666
Mahoning	3,154	4,351	8,139	1,577	1,134	2,959	12,813	2,646	1,683	4.232
Marion	4,401	8,634	2,302	819	676	1,770	2,951	1,288	3,092	4,267
Medina	10,965	18,799	24,654	3.857	3,415	5,084	21,939	6,383	4,276	4.133
Meigs	1,925	2,215	2,256	940	449	1,003	2,420	1,876	778	357
Mercer	1,996	4,046	29,626	2,436	4,038	6,050	9,263	16,239	12,035	20.885
Miami	625	1,551	17,185	3,253	1,142	1,995	7,623	9,198	5,046	4.524
Monroe	2,847	5,719	4,616	2.207	2,020	3,284	11,289	13,562	4,073	2,696
Montgomery	1,836	9,968	10,972	996	404	1,785	5,470	5,062	3,504	4,700
Morgan	1,586	1,406	4,868	354	199	349	2,163	5,232	2,929	2,016
Morrow	6,808	22,222	6,810	1,847	1,866	3.287	9,990	4,998	7,819	6.551
Muskingum	5,643	12,960	19,244	4,469	1,595	3,436	12,737	15,952	6,280	4,816
Noble	1,296	1,361	1,465	510	310	342	3,109	4,830	2,171	871
Ottawa	2,280	9,474	27,273	6,269	1,743	4,347	10,449	9,734	22,332	14,014
Paulding	9,902	30,001	55,719	23,642	4,208	9,060	6,633	8,802	12,905	8,897
Perry	2,487	5,454	14,530	1,010	505	907	4,482	5,701	2,220	1,993
Pickaway	1,984	7,156	20,205	5,342	191	1,178	14,263	3,216	4,163	2,106
Pike	1,582	3,620	4,976	1,265	337	1,410	2,246	968	511	522
Portage	5,241	8,763	8,065	2,032	1,147	4,020	14,599	5,328	3,997	3,708
Preble	465	2,104	15,525	1,446	1,074	1,644	5,793	5,216	3,112	795
Putnam	11,740	33,324	62,281	12,176	4,722	5,371	8,633	11,088	24,673	22,751
Richland	5,387	11,945	10,137	3,918	2,783	6,138	17,553	7,031	10,231	12.109
Ross	2,673	5,916	9,687	1,936	843	3,286	11,730	6,695	4,341	4,779
Sandusky	2,952	13,095	31,449	4,959	2,145	2,762	10,074	8,805	12,086	13,098
Scioto	488	1,052	601	138	139	716	792	652	941	1,371
Seneca	815	4,840	16,466	2,644	811	1,700	3,928	1,061	4,796	3,430
Shelby	690	5,704	45,400	8,063	3,925	4,205	5,736	5,727	10,254	10,727
Stark	3,318	6,009	6,193	3,560	822	3,337	12,751	3,944	4,144	4,671
Summit	1,594	6,546	7,169	1,536	1,508	3,406	7,346	4,571	3,178	4,958
Trumbull	3,414	5,855	6,239	1.851	1,290	3,670	10,370	3,018	5,255	4,532
Tuscarawas	2,307	9,811	16,673	2.337	1,027	3,218	11,958	5,005	5,130	3,967
Union	9,067	15,385	9,692	1,659	1,599	1,742	4,853	1,470	1,261	3,768
Van Wert	10,396	23,085	56,521	17,262	3,982	6,851	7,663	20,510	23,152	38.055
Vinton	1,303	2,103	2,047	567	164	446	820	1,319	676	149
Warren	3,718	12,522	20,765	5,462	2,373	2,070	11,877	1,665	4,295	3.423
Washington	1,480	1,453	1,891	1,290	494	1,881	5,406	13,763	5,252	3,126

COMPARATIVE TABLE SHOWING PRODUCTION OF RYE IN OHIO FOR TEN YEARS.—Concluded.

Counties.	Number of Bushels.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Wayne	5,341	11.221	9,979	3.274	688	1.822	9,793	1,785	3,688	5,119
Williams	3,157	3,199	13,746	2,643	3,298	3,444	7,219	9,376	14,838	7,926
Wood	5.401	15,277	62,579	12,018	3,524	5,801	11.070	15,124	24.651	25,389
Wyandot	1,484	3,872	8,266	2,179	1,352	2,609	4,942	2,545	3,970	5,207
Total product	416,735	987,553	1,606,493	435.254	185,710	339,757	855,120	617,544	671,807	710,303
Total area	41.180	73,066	129,414	34,262	15,359	28,737	65,684	99,639	72,429	48,223

Average area for ten years, 60,799 acres.
Average product for ten years, 682,627 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF OATS IN OHIO FOR TEN YEARS.

Counties.	Number of Bushels.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Adams	59,534	94,721	84,665	37,684	17,929	21,438	43,329	77,689	38,975	38,209
Allen	302,810	432,052	397,914	584,091	251,511	281,999	349,308	401,856	311,852	382,106
Ashland	565,682	771,266	600,159	627,475	659,558	587,134	609,853	571,221	544,881	598,441
Ashtabula	869,065	872,233	692,341	866,934	794,959	653,504	618,906	870,931	968,118	658,968
Athens	22,175	38,504	34,477	27,310	14,862	26,205	32,725	58,611	31,493	42,979
Auglaize	471,366	666,275	538,610	847,811	350,996	367,136	436,821	509,627	413,973	404,383
Belmont	192,775	254,552	192,815	201,014	17,338	133,704	183,874	228,195	144,951	228,454
Brown	133,557	227,823	176,719	131,018	107,276	69,462	107,478	117,588	118,490	130,405
Butler	209,774	378,654	231,571	432,839	110,330	119,349	234,489	584,500	399,513	293,559
Carroll	331,410	371,666	323,903	470,137	441,821	364,044	375,584	403,262	357,465	370,675
Champaign	602,733	747,141	357,408	788,270	165,204	262,664	278,744	389,235	303,857	258,400
Clark	302,931	433,413	243,432	447,183	135,621	159,362	190,345	224,295	212,029	198,085
Clermont	175,627	322,620	209,864	197,330	128,181	119,974	117,593	157,480	190,139	183,642
Clinton	121,359	356,059	162,546	232,554	49,114	53,357	99,373	183,517	100,621	128,794
Columbiana	621,583	654,120	477,506	741,394	693,071	599,204	603,300	651,654	639,332	599,833
Coshocton	247,734	299,789	276,456	290,431	251,767	214,135	192,631	285,635	231,328	270,444
Crawford	826,228	1,076,557	799,150	876,416	819,421	809,864	703,046	769,408	1,002,133	752,136
Cuyahoga	608,013	631,881	531,592	584,538	642,896	573,862	459,889	560,811	633,754	566,499
Darke	650,324	916,847	658,932	154,970	470,379	567,625	628,447	690,847	607,100	608,590
Defiance	637,513	1,002,549	637,344	746,344	957,135	630,863	468,003	417,897	543,670	558,774
Delaware	376,035	496,053	320,897	314,030	344,521	356,958	320,801	522,712	377,566	283,946
Erie	486,931	501,151	479,250	564,030	473,071	464,848	463,806	418,318	451,054	427,375
Fairfield	157,227	216,661	186,790	244,771	85,406	77,676	78,083	227,403	104,263	124,496
Fayette	98,763	171,756	124,904	193,449	17,685	30,060	46,186	156,590	45,668	52,841
Franklin	421,819	545,233	347,498	439,224	226,929	265,306	306,703	462,816	217,992	207,111
Fulton	858,426	1,121,673	778,510	981,196	1,131,937	770,624	563,658	632,212	804,581	627,960
Gallia	38,132	48,793	34,583	24,997	13,971	23,854	51,727	41,292	23,279	40,669
Geauga	513,083	544,777	419,073	530,673	528,497	451,831	423,622	526,633	446,775	439,415
Greene	146,099	295,258	174,826	322,131	76,022	107,115	139,219	282,940	193,468	173,284
Guernsey	118,181	156,327	158,590	140,289	143,307	132,193	137,928	174,673	116,344	182,915
Hamilton	177,195	164,841	73,784	105,361	46,943	45,988	79,636	194,096	147,535	105,828
Hancock	418,634	600,466	459,071	652,224	376,222	370,191	352,392	445,754	493,191	472,052
Hardin	485,710	525,958	565,940	512,362	271,438	309,389	329,230	492,936	417,137	370,528
Harrison	161,366	215,798	189,509	183,646	189,021	165,262	170,958	195,070	135,440	194,500
Henry	694,690	897,276	458,309	662,557	948,238	416,538	352,776	403,213	417,420	356,011
Highland	83,275	156,285	108,162	64,149	21,211	14,254	36,029	86,294	43,017	58,899
Hocking	39,939	66,734	44,254	24,744	17,533	18,303	24,507	58,315	23,915	35,029

COMPARATIVE TABLE SHOWING PRODUCTION OF OATS IN OHIO FOR TEN YEARS.—Concluded.

Counties.	Number of Bushels.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Holmes	572,156	619,259	508,332	587,906	571,119	416,464	464,954	510,123	507,230	515,572
Huron	939,569	1,125,441	869,506	1,150,706	947,383	937,284	818,368	875,667	989,998	992,621
Jackson	21,715	30,589	21,950	12,230	4,952	8,053	20,342	40,613	20,717	33,196
Jefferson	282,340	351,516	252,292	338,928	356,377	279,982	300,346	307,222	223,884	293,466
Knox	345,606	382,102	346,639	235,810	331,068	309,216	331,494	379,608	337,956	351,141
Lake	290,652	270,930	236,758	281,204	253,776	214,113	282,175	239,411	294,598	267,447
Lawrence	39,139	42,477	43,720	43,196	27,183	34,878	50,858	43,048	38,070	42,880
Licking	348,527	431,197	296,421	257,580	255 039	312,913	348,096	673,217	303,111	294,847
Logan	402,906	535,263	310,092	643,000	176,908	231,957	288,160	401,431	188,975	331,508
Lorain	824,596	878,062	731,616	854,758	806,837	807,259	675,658	903,089	813,945	721,001
Lucas	508,044	582,973	449,543	524,945	641,083	466,114	405,204	393,298	447,597	393,938
Madison	776,239	819,462	431,119	494,663	191,784	148,780	202,909	214,235	166,287	127,429
Mahoning	585,144	602,902	416,711	728,821	589,750	507,861	542,087	292,377	565,506	488,695
Marion	599,228	916,469	567,606	784,047	496,708	588,409	404,892	636,250	528,323	511,523
Medina	860,545	976,539	766,274	867,890	833,985	804,636	777,848	760,348	715,886	742,772
Meigs	36,557	54,241	41,963	36,015	20,364	46,732	54,595	69,601	30,043	52,232
Mercer	659,469	966,559	747,896	1,330,342	580,336	629,134	605,476	703,071	664,059	651,413
Miami	602,547	881,127	525,294	954,128	369,129	441,606	522,361	553,379	468,301	415,013
Monroe	139,024	163,794	129,511	129,334	111,545	102,733	122,154	141,484	84,837	145,595
Montgomery	286,054	520,869	380,074	548,282	247,374	313,473	345,303	463,801	409,472	357,536
Morgan	55,393	70,789	56,807	53,987	37,230	42,942	44,898	77,174	75,885	79,523
Morrow	530,865	731,101	537,373	508,643	577,876	541,713	440,993	540,871	484,332	497,614
Muskingum	148,818	198,887	172,403	153,423	112,326	95,445	117,933	202,956	133,479	191,596
Noble	64,919	83,075	69,966	62,481	49,463	59,972	74,511	101,641	79,965	102,586
Ottawa	421,276	411,975	372,055	338,945	123,448	278,361	287,828	310,856	369,847	285,422
Paulding	776,817	970,446	437,028	593,142	882,971	421,621	290,712	263,481	330,957	233,769
Perry	66,394	86,554	66,430	46,010	20,190	24,595	34,665	68,025	45,220	52,193
Pickaway	66,498	89,703	68,674	141,386	15,111	18,707	38,522	155,121	41,041	42,739
Pike	54,473	63,303	47,613	20,672	6,503	8,641	32,709	47,597	21,904	38,182
Portage	793,471	876,080	603,477	679,305	759,979	683,584	702,875	810,075	628,989	616,094
Preble	257,269	341,292	324,380	718,039	181,531	228,781	318,380	369,609	407,764	370,625
Putnam	407,647	523,505	268,748	575,788	241,478	203,548	218,534	218,941	282,320	277,034
Richland	768,134	957,873	815,646	789,618	833,789	797,594	787,202	759,198	878,506	855,471
Ross	43,069	66,054	47,381	35,242	7,708	15,571	24,821	121,517	41,976	74,183
Sandusky	766,800	813,543	696,100	1,098,097	589,622	568,947	568,987	580,198	694,488	585,184
Scioto	47,880	81,110	72,895	59,020	30,801	38,621	65,546	98,342	59,984	85,268
Seneca	757,267	908,007	711,928	1,013,149	624,614	713,074	592,493	778,999	714,182	730,228
Shelby	734,809	1,096,416	771,842	1,460,241	500,374	638,123	565,007	621,071	589,958	586,274

Stark	1,092,962	1,377,799	940,832	1,179,203	1,121,658	716,302	701,253	759,733	722,404	636,985
Summit	672,890	743,263	603,028	668,969	716,708	716,302	701,253	759,733	722,404	626,985
Trumbull	783,715	846,837	666,050	896,327	748,819	709,482	754,977	940,600	930,538	573,461
Tuscarawas	472,234	572,315	459,194	602,907	568,044	463,146	462,495	554,621	541,737	542,650
Union	413,370	540,240	338,309	349,126	229,269	295,708	331,050	503,789	254,670	272,063
Van Wert	581,858	719,871	326,147	644,458	532,503	393,048	429,662	334,965	517,944	718,065
Vinton	27,902	44,130	31,502	19,433	9,477	16,559	22,548	40,745	23,460	32,483
Warren	204,297	382,[illegible]	245,340	275,215	20,397	135,028	190,654	399,821	203,010	208,620
Washington	122,943	162,785	136,851	145,956	115,701	146,224	154,905	208,637	110,668	180,966
Wayne	1,244,396	1,327,916	1,010,425	1,082,945	1,128,861	926,081	1,029,760	1,030,683	1,015,500	950,125
Williams	796,137	1,166,895	786,419	951,218	933,170	820,227	664,182	578,117	727,717	715,623
Wood	1,318,483	1,507,749	1,174,448	1,486,936	1,404,129	1,101,267	1,039,803	825,611	1,324,520	1,054,242
Wyandot	465,512	602,003	446,181	491,332	369,141	379,102	300,578	510,549	446,320	387,570
Total product	37,305,993	46,789,843	33,936,143	43,193,577	33,296,912	30,694,432	30,563,033	36,027,464	34,013,739	31,991,896
Total area	1,213,228	1,188,947	1,053,876	1,251,248	969,565	976,902	1,052,605	1,262,906	1,095,142	1,051,773

Average area for ten years, 1,111,619 acres.
Average product for ten years, 35,781,303 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF CORN IN OHIO FOR TEN YEARS.

Counties.	Bushels (Shelled.)									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Adams	659,528	906,846	598,677	908,020	902.171	1,013,713	937,766	1,156.639	646.711	850,644
Allen	1,062.426	1,528,880	1,006,162	1.901.497	1,257,240	1,209,899	1,357,388	1,538.141	1,314.789	1,246,444
Ashland	889,276	1,019,692	726,991	1,066.801	836.308	968,280	831,350	968.200	911.977	463,112
Ashtabula	389,393	249,949	641,577	586.148	454,599	690,001	448.283	558.958	618.204	711,620
Athens	228,453	493,755	282,080	434.728	449.755	515,325	477,430	515.263	498,507	421.385
Auglaize	1,647,150	1,994,731	1,237,374	2,454,749	1.574.265	1.554,545	1,403.978	2,012,775	1,347,947	1.259.745
Belmont	524,364	876,340	790,647	921,245	895,204	1.064.474	844,974	1,123,655	824,700	521.784
Brown	965.403	1,284,480	586,177	1.118.755	1,214,197	1,249,513	1,616.065	1,413.209	1,020.024	955 331
Butler	1,680,633	2,193,663	1,128,110	2,393,974	2.101,482	2,079,862	1,942,276	2,855 910	1.572,733	1,396 373
Carroll	389,010	459,200	496,543	566,239	391,093	580,806	439,523	612.753	496,521	271.203
Champaign	2,081,850	2,648,546	1,732,881	3,088,845	2,225,267	2,448,256	1 858,336	2,748,826	1,720,523	1,968,895
Clark	1,418,098	2,361,166	1,631,877	2,716,325	2,035,440	2.118,612	2,026,852	2,419,539	1,621,740	1.703.073
Clermont	1,188,543	1.054.348	542,678	1,161,680	1,111,813	1,042.754	1,000.661	1,094,808	1.189.538	636,340
Clinton	1,443,153	2,692,420	1,645.316	3.275,073	2.555,251	2,453,512	2,280,104	2,902,213	2.270.012	2,092,341
Columbiana	655,691	630,013	633,730	729.665	601,318	800.515	536,015	797.793	805,417	427,170
Coshocton	578,336	983,068	780,966	933.213	773.188	1,119,201	790,637	1,026,726	1.047,137	614.108
Crawford	1,427,556	1,428,498	1,133.960	1,529 246	1.345.669	151,134	1,106.100	1,375,642	1,514.750	1,083.403
Cuyahoga	310,128	229,458	351,938	429.792	373,953	468,740	329,851	322.106	402,182	277,535
Darke	3,553,020	4,192,821	2,744,410	5,099,152	3,208,023	3,424,966	3,102.697	4,238,209	2,619,091	2,312,433
Defiance	1,114,482	1,199,386	785,227	1,217,657	1,619.358	1,052.589	916,558	1,235,429	817,674	801,304
Delaware	1,397.833	1,718.267	966,755	1,616.187	1,540.143	1,522,213	1,449.185	1,757,653	1,056,614	1,243,620
Erie	489.991	548,596	514,501	730.722	649,002	691.450	572.969	708,363	566,006	684,943
Fairfield	2,100.073	2,041,560	2,279,694	2,105.011	2,199,100	2,012.881	1,688,568	2,241,576	1,679 819	1,885,645
Fayette	1,439,774	2,561,635	2,024,855	3.172,320	2,515,635	2,296,045	2.570.879	2,937.730	1,819,871	1.954.960
Franklin	1,722.803	2,848,567	1,338,557	2,891,623	2,305,290	2,332,185	2.523,647	3,254,039	2,280.794	2.261.157
Fulton	1,353.100	1,207,670	1,227,055	1,435,998	1,254.455	1,308,561	920,257	1,230,188	946.941	770.799
Gallia	387.901	579,839	336,602	557.231	640,882	675.596	616,806	681.697	519.875	470,702
Geauga	259.773	200,538	334,807	390,329	328,128	417,657	330,419	357,722	319,214	252,811
Greene	1,723,825	2,736,452	1,775,441	2,756.056	2,754,575	2,583.818	2,330,046	3,535.217	2,173,452	2,155,070
Guernsey	358,505	553,114	663,010	543,774	606,624	828.388	600,491	780.770	685.910	521,725
Hamilton	578,555	776,821	403.885	711,558	551,100	642.984	725,646	868,988	573,161	348.343
Hancock	1,897,955	2,463,238	1,728,507	2,531,303	2.201,211	1,891,306	1,736,131	2,288,577	2,270.751	1,712,219
Hardin	1,186,468	2,048,464	1,420,324	2,138,105	1,565,667	1.440.005	1,368,508	2,055,035	1,274.403	1,237,701
Harrison	279,852	511,120	480,768	505.580	419,352	646,208	467,615	626,528	566,971	327,067

Henry	2,283,889	2,212,583	1,898,418	2,685,462	2,994,496	2,217,175	2,038,971	2,398,694	1,964,750	1,809,368
Highland	1,066,210	2,016,476	1,214,651	1,793,370	1,763,498	1,661,306	1,691,519	2,132,133	1,427,075	1,325,736
Hocking	309,986	418,146	307,210	469,461	480,428	519,824	445,936	529,207	417,142	421,497
Holmes	746,882	906,335	776,845	901,928	663,754	860,545	705,329	852,011	695,059	437,789
Huron	977,955	1,034,361	1,012,855	1,346,616	1,266,748	1,223,828	894,766	1,080,982	1,061,286	706,037
Jackson	234,165	333,670	311,456	317,238	287,640	432,326	347,163	432,923	278,399	349,020
Jefferson	348,449	467,079	426,500	469,437	469,059	638,230	475,869	649,499	535,160	258,869
Knox	968,379	1,178,641	1,133,055	1,105,868	1,055,860	1,399,337	1,034,932	1,420,425	1,108,078	718 143
Lake	167,492	126,553	225,459	277,266	238,540	246,321	250,227	227,714	285,149	178,749
Lawrence	244,571	381,178	334,518	426,642	367,082	466,115	444,250	426,023	370,443	355,724
Licking	1,521,885	1,958,426	1,526,575	1,736,046	1,981,628	2,167,822	1,619,161	601,094	1,651,757	1,536,529
Logan	1,444,022	2,193,723	1,223,351	2,421,850	1,753,369	1,713,214	1,606,952	2,020,260	1,237,751	1,476,866
Lorain	607,907	566,510	597,416	772,542	662,442	794,862	568,355	686,801	651,603	494,658
Lucas	855,166	842,660	814,483	1,014,390	916,422	950,242	696,837	880,480	699,385	582,761
Madison	2,197,225	3,258,880	2,324,405	3,633,960	2,824,597	2,871,614	2,922,451	3,916,307	2,812,326	3,368,050
Mahoning	444,144	416,683	451,832	682,243	547,222	644,468	426,137	2 434,461	476 950	388,234
Marion	1,455,135	2,016,466	1,229,197	2,209,384	1,794,112	1,825,765	1,451,218	2,080,657	1,831,453	1,666,897
Medina	717,854	719,753	718,489	895,151	692,320	830,655	677,588	817,701	687,115	471,318
Meigs	258,394	489,013	225,928	396,882	561,612	559,523	425,885	509,077	441,688	330,353
Mercer	1,644,644	2,036,252	1,356,306	2,468,881	1,686,532	1,566,649	1,416,796	1,989,803	1,533,879	1,472,242
Miami	1,902,533	2,742,883	1,761,650	2,888,779	2,063,832	2,112,438	1,907,044	2,705,212	1,440,979	1,502,462
Monroe	390,670	649,208	532,871	588,384	598,603	634,108	537,453	596,458	517,222	282 026
Montgomery	1,118,564	2,045,440	1,273,938	2,069,967	1,680,543	1,918,425	1,658,414	2,642,318	1,442,263	1,547,585
Morgan	391,757	590,292	467,950	595,658	627,117	589,811	578,362	662,452	592,137	460 671
Morrow	840,314	982,656	771,235	1,102,462	1,109,115	1,239,920	856,196	1,007,102	1,004,100	784,083
Muskingum	669,356	1,022,037	841,998	1,073,900	1,049,738	1,175,889	945,800	1,268,634	1,091,455	296,294
Noble	414,051	637,844	611,943	566,642	628,768	572,268	613,915	688,186	620,916	394,762
Ottawa	878,627	706,809	633,927	819,250	815,567	683,287	813,510	921,456	853,920	477,662
Paulding	2,016,302	2,361,586	1,162,070	1,925,335	2,477,194	1,673,118	1,110,984	1,581,195	1,473,627	874,654
Perry	539,028	617,362	473,038	651,005	662,910	668,205	623,430	1,246,476	587,840	484,232
Pickaway	2,254,422	3,157,955	2,288,445	3,431,553	2,949,668	2,300,028	2,615,699	4,020,015	2,641,950	2,793,610
Pike	521,807	785,848	848,649	796,391	623,679	830,235	737,540	1,030,174	590,062	932,635
Portage	489,381	388,212	497,464	595,627	445,843	646,067	448,948	637,373	563,746	417,983
Preble	1,560,045	2,502,491	1,537,250	2,793,717	2,116,052	2,020,943	1,884,200	2,616,078	1,673,061	1,712,613
Putnam	2,481,147	3,023,122	1,829,837	3,266,499	2,601,494	2,067,899	2,433,846	2,398,700	2,482,136	2,003,212
Richland	945,983	1,308,236	1,033,994	1,253,450	1,192,010	1,197,431	977,172	1,089,980	1,092,156	651,701
Ross	1,732,452	2,304,574	3;114,693	2,449,357	2,498,190	2,668,608	2,218,451	3,160,790	2,934,169	2,497,783
Sandusky	1,373,728	1,474,840	1,465,867	2,056,915	1,451,885	1,665,140	1,497,865	1,496,354	1,562,198	1,273 177
Scioto	525,367	855,810	640,529	558,771	774,136	826,133	715,199	644,455	716,036	838,800
Seneca	1,657,142	1,801,515	1,682,183	2,228,435	1,731,338	1,856,587	1,420,813	1,891,697	1,806,580	1,472 872
Shelby	1,608,075	2,297,897	1,397,200	2,783,137	1,636,396	1,714,186	1,332,986	2,206,410	1,288,781	1,542 529
Stark	1,114,138	1,309,470	1,102,941	1,325,034	1,076,804	1,378,993	1,125,604	1,434,023	1,425,923	724,204
Summit	566,433	571,458	651,123	743,137	580,650	869,622	614,926	791,030	728,837	453,925
Trumbull	387,613	303,725	544,999	593,774	462,275	593,526	614,520	640,269	603,299	432,568
Tuscarawas	560,288	781,360	721,376	842,961	627,542	898,526	684,775	864,204	891,503	506,476
Union	1,564,359	2,229,616	1,461,727	2,124,346	1,765,009	1,735,316	1,861,126	2,260,187	1,438,152	1,437,624
Van Wert	1,623,894	2,579,998	1,327,475	2,498,029	2,193,660	1,609,615	1,503,679	2,046,000	2,105,548	1,850,425
Vinton	180,093	266,123	234,336	327,684	276,072	343,121	300,466	364,855	315,840	309,097
Warren	1,235,005	1,636,491	1,165,074	1,998,030	1,934,531	1,859,266	1,745,400	3,749,484	1,541,712	1,085,442
Washington	451,393	727,312	484,950	724,457	722,987	799,270	759,702	701,817	661,374	412,611
Wayne	1,326,645	1,712,987	1,146,277	1,587,610	1,428,753	1,581,285	1,346,455	1,533,031	1,478,537	885,484

COMPARATIVE TABLE SHOWING PRODUCTION OF CORN IN OHIO FOR TEN YEARS—Concluded.

Counties.	Bushels (Shelled.)									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Williams	1,295.270	1,101.575	986,975	1,171.857	1,118,563	1,043,677	776,751	1,045,812	745,642	745,306
Wood	2,924.860	2,681,169	3,431.449	3,442 570	3,178,841	2,481,132	2,503.655	2,861,704	2,871.727	2.313,169
Wyandot	1,393.352	1,720,919	1,162,347	1,593,714	1,574,785	1,444,258	1,113,728	1,564,721	1,538,340	1,211,825
Total product	92,820,349	122,675,349	92,368,811	143,161,675	115,138,669	114,214,148	103,004,970	134,796,274	102,447,445	88,805,607
Total area	2,945,473	3,160,066	3,079,376	3,361,166	3,025,666	3,057,712	2,999,826	3,230,331	3,037,014	2,910,203

Average area for ten years, 3,080,683 acres.
Average product for ten years, 10,943,329 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF MEADOWS IN OHIO FOR TEN YEARS.

Counties.	Tons of Hay.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Adams	14,144	11,134	14,221	12,124	10,767	12,169	9,486	9,155	9,343	11,889
Allen	16,948	9,741	17,155	22,709	20,394	26,105	21,497	22,519	11,830	27,339
Ashland	32,308	....	17,155	35,550	26,026	32,279	21,597	27,655	17,352	36,651
Ashtabula	66,712	25,804	20,529	55,452	57,306	56,763	50,451	47,646	39,327	63,848
Athens	17,092	64,312	64.755	21,333	17,576	22,122	17,941	13,149	7.010	21,760
Auglaize	11,743	16,332	22,759	15,121	14,891	16,979	16,442	16,117	9,803	19.146
Belmont	39.909	7.490	13,157	40,264	37,050	38,728	28,876	27,803	14,597	29,822
Brown	15,709	27.668	36.887	13,724	14,475	13,710	13,450	12,411	12,652	16.937
Butler	15,354	11,939	16,583	14,641	14.131	15,952	14,096	11,287	21,107	17,785
Carroll	31,885	12,385	15.820	31,184	28,668	29,316	22,602	23,305	12.547	31.634
Champaign	11,743	28.049	35,787	12,583	8.029	14,081	15,566	15,304	7,452	16,963
Clark	24.548	7,936	12,289	16,031	11.951	17,205	18,210	16,840	12,345	21,613
Clermont	17,351	11,926	21,024	16,576	15.535	17,214	14,145	11,332	18,107	25,330
Clinton	19,214	13,433	16,811	15,463	13.342	16,359	11,792	12,407	10,590	28,236
Columbiana	48,999	11,182	14,496	42,608	41.881	46.204	38,475	39,786	15,632	44,913
Coshocton	38,141	42,128	117,073	34,946	27,247	37.051	26,182	26,557	13,152	24,860
Crawford	34,097	31,272	40,894	29,806	31,651	34,516	31,545	30,891	20,732	35,508
Cuyahoga	35,552	21,036	19,814	26,719	29,264	36,317	34,363	31,979	23,149	40,123
Darke	13,000	35,883	38,673	16,295	14.152	19,123	19,420	17,323	9,264	16,464
Defiance	33,935	8,248	12,763	23,065	19,141	21,201	18,613	21,487	13,667	21,646
Delaware	42,161	19,772	22,941	23,883	27,562	38,424	35,558	33,590	33,422	55,716
Erie	9,807	33,309	42,287	11,783	12,301	14,449	11,532	12,919	9,634	15,482
Fairfield	39,809	8,386	9,288	29,509	22,554	29,368	17,466	24,092	16,008	30,837
Fayette	10,700	24,097	40.943	9,745	9,859	12,188	14,149	8,442	4,103	14,099
Franklin	39,045	7,148	44,465	28,419	27,882	31,100	30,987	29,686	20,002	41,234
Fulton	17,387	25,071	12,880	18,058	18,786	24,375	16,721	25,979	12.892	24,259
Gallia	11,365	15,089	18,860	12,336	11.380	12,848	13,312	8,985	7.516	12,224
Geauga	32,523	9,302	11,522	28,431	27,987	30,826	24,807	26,852	12,765	40,109
Greene	15,983	36,380	35,551	15,227	12,491	16,083	17,542	33,708	13,926	24,489
Guernsey	41,393	10,836	16,960	36,210	32,677	36.762	28,969	25,704	14,347	29,494
Hamilton	11,974	11,716	10,336	12,744	13,227	13,351	14,468	11,040	14,017	14,627

COMPARATIVE TABLE SHOWING PRODUCTION OF MEADOWS IN OHIO FOR TEN YEARS—Concluded.

Counties.	Tons of Hay.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Hancock	27,845	12,099	22,951	28,655	31,597	33,407	29,540	36,044	25,047	41,533
Hardin	23,147	10.090	17.161	19,158	24,276	48,355	24,937	32,690	12,469	33,450
Harrison	31,979	30,947	36,817	33,208	34,741	30,569	28.295	26,225	12,945	33,287
Henry	16,414	15,431	17,585	16,538	16.339	15,874	12,077	17,182	10.577	16,854
Highland	20,644	15,355	23,777	18,363	20,724	21,280	15,542	14,799	14,278	26,964
Hocking	14,034	10,903	33,915	11,638	11,117	12,345	8,473	10,131	6,444	13,140
Holmes	27,708	23,056	29,813	28,469	19.237	27,125	20,827	19,911	14,668	27,686
Huron	42,546	27,458	28,502	31,113	34.863	40,775	33,353	30,932	26,574	51,278
Jackson	13,876	9,035	11,181	11,346	10,859	12,029	13,140	8,625	6,193	13,388
Jefferson	31,841	25,496	32,825	31,168	28,448	32,454	26.124	25,330	10.853	26,052
Knox	45,896	29,673	37,816	26,920	28.987	35,557	25,559	27,973	13,787	35,102
Lake	17,390	14,836	18,241	12,647	12,027	12,716	15,412	15,900	8,524	15.870
Lawrence	4,533	7,601	5,034	4,686	4,511	4,813	5,113	3,834	4,081	4,083
Licking	74,794	55,809	70,700	45,663	42,240	55,286	53,755	51,919	27,474	51,805
Logan	18.964	10,321	16,422	17,230	16.241	21,731	18,952	22,037	10,313	29,819
Lorain	50,740	47,155	42,217	41,010	44,487	49,466	37,790	36,527	33,482	79,180
Lucas	15,721	11,841	13,600	12,828	11.514	14,296	13,963	14,437	8,552	17,203
Madison	17,883	8,140	17,207	9,766	8,592	14,568	16.809	12,069	8,316	23,445
Mahoning	45,502	40,502	36,330	31,246	24,758	41,087	20,601	26,355	14,264	42,063
Marion	22,578	11,126	16,096	17,411	20.827	26,329	21,276	28,216	12,580	35,229
Medina	39.959	33,248	27,723	27,525	28,514	38,250	25,434	30,007	18,969	46,721
Meigs	15,215	13,476	17,147	15,847	10,242	16.659	14,717	10,720	5,338	16,837
Mercer	14,104	8,884	14,646	19,622	18,928	20,586	20,251	19,078	11,430	29.223
Miami	9,402	6,919	7,573	9,141	7,556	19,939	11,442	12,652	6,981	11,667
Monroe	28,280	16,937	28,182	29,126	31.154	26,592	18.950	12,724	9,201	22,438
Montgomery	17,365	10,425	17,651	13,859	14.435	16,307	15,132	13,257	12,625	18,141
Morgan	26,218	20,763	31.152	28,270	22.316	26,956	19,905	19,633	12,322	22.526
Morrow	36,052	23,606	29,538	21,759	26.962	41,133	31,227	29,591	18,626	49.217
Muskingum	44,415	37,703	53.174	46,013	34.990	44,901	32,823	35,747	18.242	35,262
Noble	31,671	22,276	30,508	26,821	21,708	26,720	23,465	16,370	12.326	23,149
Ottawa	21,014	14,824	16,062	12,817	14,697	16,387	11,232	11,107	10,006	16,026

Paulding	21,523	16,529	18,871	23,224	14.681	17,095	12,360½	12,104	7,345	16,141
Perry	26,678	19,557	31,061	24,870	18,210	22,950	17,460	18,788	12,289	22,870
Pickaway	12,987	6,814	17,357	12,635	9,983	12,640	10,807	15.033	8,702	12.192
Pike	9,510	4,463	6,074	5,215	5,306	5,054	3,615	3,378	4,417	7,796
Portage	37,872	39,029	36,363	27,044	33.559	32,971	21,124	21,999	11,275	38,177
Preble	7,403	4,875	7,899	7,601	7,581	9,917	10,509	7,482	8,347	10,699
Putnam	20,855	15,761	17,705	22,847	19,613	18,163	18,105	20,193	12.648	37,761
Richland	33,675	27,641	30,086	28,906	26,464	36,086	27,010	27,976	19,070	43,400
Ross	12,266	8,187	14,795	13,190	10,354	12,162	11,204	9,288	5,318	14,019
Sandusky	27,116	17,834	23,347	20,848	18,415	22,540	20,585	23,475	18,422	23,868
Scioto	9,190	9,125	9,886	8,891	9,649	9,046	9,310	8,592	6,872	11.272
Seneca	28,506	15,122	21,317	25,064	29,643	29,520	23,836	24,938	21,752	41,128
Shelby	9,084	6,750	9,602	11,298	10,392	14,995	11,252	15,116	7,692	16,178
Stark	52,959	52,701	55,101	42,472	51,927	56,360	45,563	50,630	25,341	60,165
Summit	31,391	32,178	33,080	25,377	29,509	31,020	26,815	24,144	10,848	32,613
Trumbull	63,919	61,764	60,832	55,462	61,407	61,081	43,870	35,496	24,715	62,081
Tuscarawas	45,015	54,750	49,832	47.264	55,817	46,155	35,951	37,129	23,590	44,626
Union	27,293	13,084	22,183	16,003	19,436	28,344	25,456	19,104	13,181	42,487
Van Wert	29,386	22,807	30,839	28,116	24.716	28,592	25,956	25,155	10,582	30,495
Vinton	12,939	9,049	11,012	10,271	8,751	11,099	11,513	7,686	4,478	12,081
Warren	19,465	13,229	17,383	16,586	16,120	16,129	14,488	12,927	17,248	23,123
Washington	29,683	25.516	32,045	33,392	25.709	34,991	24,427	23,722	14.971	29,485
Wayne	40,724	42,571	49,134	41,313	41.649	47,541	32,591	37,849	16,858	56,252
Williams	33,541	30,178	25,230	20,518	28,843	30,958	28,586	34,187	21,769	27,981
Wood	34,181	24,950	28,272	23,588	23.121	33,997	28,847	30,465	18.758	33,647
Wyandot	35,450	15,180	16,926	20,583	23,731	26,922	26,371½	29,925	14.080	30,041
Total product	2,370,842	1,844,892	2,339,399	2,034,980	1,972,659	2,323,978	1,903,963	1,925,389	1,236,315	2,544.248
Total area	1,975,387	1,658,397	1,960,476	2,072,781	1,776,075	2,001,111	1,661,038	1,941,274	2,037,931	2,239,212

Average area for ten years, 1,932,368 acres.
Average product for ten years, 2,049,666 tons.

COMPARATIVE TABLE SHOWING PRODUCTION OF CLOVER IN OHIO FOR TEN YEARS.

Counties.	Tons of Hay.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Adams	5,350	5,399	752	1,609	4,963	2,731	7,425	1,160	1,438	1,585
Allen	22,222	21,341	26,026	798	15,684	8,868	18,057	350	1,773	9,879
Ashland	19,121	21,039	38,940	10,692	16,998	13,340	32,459	9,795	6,002	10,488
Ashtabula	1,747	2,195	3,760	1,839	2,785	3,384	6,780	4,041	1,314	879
Athens	1,930	2,813	223	497	2,253	880	2,450	400	296	950
Auglaize	22,098	16,683	16,873	934	12,062	8,468	15,585	1,967	1,512	9,501
Belmont	1,807	5,142	413	960	6,372	1,899	12,919	2,073	694	1,958
Brown	2,623	6,356	778	1,941	1,432	1,041	2,351	653	719	792
Butler	18,915	15,740	12,342	10,382	12,847	9,859	17,278	2,057	5,629	9,104
Carroll	894	2,555	886	426	3,984	2,575	8,457	826	509	1,642
Champaign	18,031	18,297	16,957	942	20,244	13,762	24,238	1,813	5,068	14,494
Clark	9,320	14,783	12,557	1,662	12,211	10,553	21,675	2,337	5,622	10,297
Clermont	5,161	4,174	2,041	2,023	3,038	2,326	4,333	905	2,022	1,536
Clinton	9,152	8,253	6,073	4,385	8,415	5,249	18,334	3,251	4,109	3,307
Columbiana	3,842	7,737	7,439	4,543	8,931	2,163	14,857	3,337	3,326	8,534
Coshocton	4,269	8,791	3,089	1,773	8,791	3,122	10,478	2,727	809	1,773
Crawford	19,273	22,461	33,516	6,289	14,857	11,323	22,271	5,346	7,100	9,281
Cuyahoga	2,178	2,472	4,291	1,858	3,432	1,549	4,419	2,626	2,341	1,524
Darke	35,011	30,979	33,101	2,982	26,603	21,540	30,699	1,194	4,426	20,442
Defiance	22,627	19,079	23,334	12,688	5,191	8,747	23,093	1,333	6,472	6,980
Delaware	10,700	18,875	12,607	1,757	10,641	4,947	21,587	3,003	3,683	9,217
Erie	7,827	7,571	11,061	3,633	5,985	4,837	10,397	2,046	3,867	2,173
Fairfield	13,776	17,644	13,880	7,566	16,816	7,879	22,390	4,205	7,183	13,520
Fayette	9,830	6,438	5,215	2,115	4,069	2,409	10,305	894	2,722	3,658
Franklin	9,221	12,555	8,401	3,466	9,538	5,124	19,196	3,211	5,756	5,808
Fulton	23,772	21,345	20,536	13,462	2,444	9,374	18,917	2,681	7,182	7,630
Gallia	2,339	2,303	237	578	1,823	1,127	2,892	952	514	821
Geauga	1,596	2,739	4,408	2,704	2,792	2,710	9,155	2,735	645	1,143
Greene	13,139	13,503	11,366	6,742	9,450	6,731	18,796	1,995	6,621	9,212
Guernsey	1,080	2,442	829	618	3,788	1,202	5,024	672	342	645
Hamilton	6,182	6,096	6,006	4,476	4,923	5,578	5,088	1,048	3,161	4,087
Hancock	27,826	34,324	33,270	2,807	14,161	19,003	32,576	1,923	3,211	12,233
Hardin	14,376	20,554	21,154	945	12,864	10,249	21,494	334	1,291	6,745

Harrison	1,581	1,685	393	645	2,648	2,682	5,878	1,219	315	573
Henry	20,669	15,233	14,558	9,884	2,697	9,331	17,744	1,935	6,326	3,201
Highland	11,038	7,623	3,015	3,238	5,372	3,071	13,825	883	1,811	3,022
Hocking	3,204	2,011	551	808	3,240	1,652	3,720	895	671	1,079
Holmes	8,303	1,038	9,200	4,145	10,093	4,179	15,490	12,084	3,946	4,369
Huron	19,801	22,549	37,265	13,131	15,607	10,359	26,941	7,175	7,878	4,769
Jackson	219	291	25	226	401	227	1,053	141	136	134
Jefferson	1,158	5,800	1,065	1,882	6,247	1,789	9,917	3,036	823	1,935
Knox	6,870	11,281	13,535	6,080	16,118	8,189	20,210	7,242	3,775	9,511
Lake	945	1,171	1,477	1,187	1,491	764	1,731	984	353	474
Lawrence	758	822	262	560	1,025	458	1,082	507	389	252
Licking	6,583	14,860	10,371	6,941	15,430	6,177	15,314	4,802	6,576	10,436
Logan	23,448	21,979	24,102	486	17,563	12,045	26,675	498	9,667	13,049
Lorain	8,872	10,598	16,911	7,286	6,984	3,856	14,396	4,689	4,343	2,753
Lucas	5,236	6,021	7,490	5,450	1,713	5,250	10,200	2,081	3,554	4,381
Madison	12,827	8,912	8,213	1,891	9,224	4,812	5,220	2,618	4,065	4,186
Mahoning	4,114	8,250	6,966	5,337	9,144	4,404	19,323	3,153	2,292	5,960
Marion	15,339	18,968	22,019	2,217	10,915	9,745	20,352	3,614	4,214	6,861
Medina	23,684	16,297	26,006	8,475	15,203	8,723	23,509	5,316	6,218	9,661
Meigs	2,934	3,237	356	892	2,181	1,067	3,555	595	363	1,765
Mercer	25,956	22,965	24,010	1,741	16,166	7,502	14,941	757	960	10,081
Miami	14,888	14,156	18,484	2,827	12,090	10,766	18,894	941	1,665	10,012
Monroe	583	1,663	142	203	3,559	634	6,285	279	64	459
Montgomery	15,490	14,411	13,631	4,932	14,978	12,192	22,432	2,041	4,194	9,959
Morgan	2,709	5,311	433	803	5,178	1,832	8,828	855	776	2,435
Morrow	15,360	24,695	25,483	4,586	13,825	6,063	21,713	8,205	8,343	7,746
Muskingum	3,792	7,838	1,787	1,846	6,696	2,712	9,283	2,617	1,050	2,590
Noble	1,103	3,039	301	287	2,140	1,081	5,352	285	384	1,099
Ottawa	7,798	10,639	13,641	5,308	2,643	5,601	13,286	2,186	3,017	527
Paulding	16,610	8,540	13,308	4,311	1,773	3,632	7,463	486	1,347	2,403
Perry	4,981	6,766	1,842	2,664	8,110	4,545	8,035	1,005	508	1,237
Pickaway	11,674	9,061	5,990	5,341	9,188	5,434	18,997	2,595	5,294	8,505
Pike	3,524	2,616	1,155	2,032	3,177	2,366	3,677	943	1,444	1,755
Portage	7,326	7,310	7,625	3,456	11,953	4,945	18,869	5,384	2,104	8,029
Preble	19,013	15,244	13,628	8,521	11,597	10,045	22,081	2,318	4,144	9,610
Putnam	22,766	19,201	22,962	2,115	6,697	13,955	19,852	955	2,654	7,412
Richland	18,737	19,239	28,122	8,576	19,387	13,068	34,156	12,199	9,499	10,140
Ross	11,009	8,022	2,822	3,922	7,649	4,793	11,076	2,135	3,558	5,932
Sandusky	13,251	14,255	19,473	7,582	10,064	10,877	21,271	6,562	7,517	7,973
Scioto	2,051	2,594	476	2,461	2,601	2,161	3,389	1,162	1,315	1,274
Seneca	30,897	35,139	41,593	10,960	20,941	21,565	38,937	3,438	7,473	11,799
Shelby	20,150	18,684	17,298	390	12,637	9,939	18,195	336	1,854	9,934
Stark	12,604	15,008	13,845	9,501	18,002	4,291	23,112	10,351	7,816	10,073
Summit	6,357	5,991	6,421	3,139	6,150	5,093	17,263	5,198	2,966	8,081
Trumbull	2,145	3,378	3,724	1,926	5,017	3,284	14,471	5,607	2,455	2,711
Tuscarawas	2,374	4,226	2,245	852	4,659	1,117	10,735	3,262	2,364	2,055
Union	19,098	23,326	25,790	698	13,979	5,075	19,541	1,763	3,115	6,205
Van Wert	21,072	18,465	19,600	3,900	6,722	8,881	13,215	585	860	6,865
Vinton	440	491	105	168	1,068	510	1,915	258	301	542
Warren	9,771	9,246	7,525	6,461	8,522	5,266	16,740	1,928	5,435	6,754
Washington	2,490	3,263	316	757	2,444	1,433	10,806	755	787	2,034
Wayne	21,882	21,405	23,939	13,592	21,305	15,416	41,009	17,941	11,188	12,758

COMPARATIVE TABLE SHOWING PRODUCTION OF CLOVER IN OHIO FOR TEN YEARS—Concluded.

Counties.	Tons of Hay.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Williams	22,713	19,588	28,827	19,685	4,744	10,550	21,358	3,588	7,463	8,151
Wood	18,957	17,070	20,979	9,877	7,463	8,382	19,424	3,277	6,289	5,562
Wyandot	18,131	23,457	27,771	5,725	20,418	13,686	17,888	2,185	4,150	8,679
Total product	972,580	1,026,948	1,051,464	361,980	749,225	552,021	1,336,599	252,507	299,377	506,589

Average product for ten years, 710,929 tons.

COMPARATIVE TABLE SHOWING PRODUCTION OF CLOVER SEED IN OHIO FOR TEN YEARS.

Counties.	Bushels of Seed.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Adams	2,535	7,805	82	966	3,768	793	10,004	1,585	1,729	1.020
Allen	5.825	7,831	12.824	200	4,930	1,045	18,999	361	629	6.320
Ashland	4,646	4,111	6,733	2,084	4,689	989	17,618¾	3,726	6,137	3,812
Ashtabula	68	138	416	38	77	41	2,268	285	60	11
Athens	62	174	....	....	191	21	191	35	31	93
Auglaize	9,397	14,560	7,673	370	7,296	1,340	13.702	255	1.143	3,264
Belmont	192	1,710	6	260	2,947	44	8,125	422	133	127
Brown	388	2,639	238	645	920	143	2,798	270	639	675
Butler	5,298	7,948	2,775	3,842	6,520	570	12,466	1,751	4.518	4.884
Carroll	495	1,318	151	66	773	993	6.038	624	643	275
Champaign	7,410	9,319	7,280	272	8,374	1.980	20,524	229	4.291	8.895
Clark	3,614	3,381	7,737	1,035	8,969	1,244	13,109	514	7,153	7,742
Clermont	453	1,371	214	219	890	39	1.578	179	578	95
Clinton	5,260	2,601	3,964	4.116	7,929	1,256	11,976	2.487	10.293	3.405
Columbiana	467	935	351	277	601	21	6,541	328	1.638	562
Coshocton	1,619	5,656	579	621	5,211	367	10.758	1,540	1,178	800
Crawford	8,300	6,031	13,000	2,144	5,105	1,958	20.605	3,159	15,820	7,304
Cuyahoga	60	21	305	3	112	15	1,344	58	60	11
Darke	12.936	18,783	14,504	930	17.105	4.788	27,478	700	5.236	7.938
Defiance	12.594	6,578	20,559	18,006	4,419	5,030	18,253	2,317	13.903	14.694
Delaware	2,772	4,941	3,800	417	2,428	220	8,133	678	3,200	5.620
Erie	1,564	1,461	2,528	811	1,434	506	9,414	1,488	3,227	1.069
Fairfield	6,725	11,544	6,410	7.507	17,068	1,211	19,902	1,289	12,844	20,573
Fayette	5,499	3,212	4,169	2,690	4,660	249	11,947	638	4,603	2.108
Franklin	3,480	4,310	4,001	2,507	7.845	419	16,952	602	8.078	6.003
Fulton	6,171	3,762	8,848	11,169	693	2,860	17,549	3,236	5,314	5.521
Gallia	165	279	16	101	224	122	817	372	84	145
Geauga	17	46	20	65	28	50	1,749	242	6	68
Greene	5,794	8,182	7,649	6,261	11,152	1.545	15,318	821	10,684	5,613
Guernsey	401	1,089	8	41	1.102	136	3,182	242	43	123
Hamilton	1,712	1,537	1,481	1.364	1.145	230	2,154	194	1.398	843
Hancock	8.528	11,887	18.733	2,127	4,489	3,584	27,923	2,526	2.986	14.890
Hardin	5,875	8,710	14,210	418	3,830	1,233	14,793	214	608	7,985

COMPARATIVE TABLE SHOWING PRODUCTION OF CLOVER SEED IN OHIO FOR TEN YEARS—Concluded.

Counties.	Bushels of Seed.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Harrison	143	804	87	277	1,270	2,627	5,829	716	143	169
Henry	12,006	7,711	12,830	10,794	2,161	4,831	20,098	2,663	8,588	10,484
Highland	6,636	10,308	1,609	3,592	6,753	545	18,006	1,548	5,174	3,094
Hocking	637	2,390	73	283	2,293	167	2,946	302	391	1,076
Holmes	3,322	5,612	3,171	1,520	5,806	1,112	12,337	6,177	5,832	1,875
Huron	5,253	4,049	12,333	4,781	3,586	1,910	22,836	3,076	9,986	1,298
Jackson	15	15	....	....	42	....	160	....	6	2
Jefferson	198	1,680	136	364	3,002	61	8,979	1,689	174	168
Knox	2,365	4,487	3,786	1,526	8,533	836	17,008	3,565	4,816	4,716
Lake	84	13	69	74	53	48	1,045	60	186	30
Lawrence	9	47	17	30	56	33	254	107	161	3
Licking	2,798	6,490	491	3,492	10,107	1,736	17,562	1,248	8,548	10,876
Logan	10,338	15,994	8,388	75	7,629	1,079	16,205	207	1,465	14,245
Lorain	885	798	2,591	579	494	197	6,741	638	1,083	387
Lucas	2,506	3,513	5,261	5,013	735	1,582	10,172	1,059	2,745	2,180
Madison	5,097	3,870	5,240	876	4,298	224	7,895	902	8,884	4,205
Mahoning	325	270	318	252	535	120	7,760	360	1,196	763
Marion	5,447	4,016	10,963	854	2,067	1,153	14,073	1,980	8,234	8,532
Medina	3,949	2,074	5,152	1,760	2,654	1,020	13,965	1,473	2,466	2,025
Meigs	70	313	77	37	183	37	444	36	48	106
Mercer	12,820	22.112	17,208	1,620	12,544	2,004	15,465	237	1,467	4,734
Miami	4,853	6,492	10,114	1,359	8,964	1,832	13,611	482	2,336	3,109
Monroe	145	1,170	24	42	1,911	82	5,574	33	7	76
Montgomery	3,899	6,022	6,572	1,310	767	1,547	16,286	888	3,589	4,605
Morgan	214	2,467	3	122	1,954	44	5,269	166	224	456
Morrow	3,879	3,218	7,956	1,263	1,666	561	17,085	2,350	13,370	8,737
Muskingum	448	3,989	80	387	2,677	114	6,170	587	427	853
Noble	128	1,534	15	32	740	44	2,451	28	152	128
Ottawa	1,365	1,160	4,081	2,786	683	840	8,748	1,635	1,502	191
Paulding	6,851	3,529	12,477	5,244	1,376	1,733	9,528½	513	2,047	2,606
Perry	1,603	5,430	819	1,785	6,110	980	9,933	967	1,326	2,117
Pickaway	8,228	7,570	4,401	6,991	12,256	1,025	15,320	1,579	7,735	12,957
Pike	1,380	3,303	137	1,476	2,265	300	3,590	588	1,278	2,078

Portage	1,188	677	833	257	1,844	176	10,644	945	478	561
Preble	7,579	7,747	3,560	3,147	6,640	1,255	14,593	1,307	6,076	6,814
Putnam	9,834	8,152	18,065	1,742	4,396	1,199	33,306	793	1,564	4.831
Richland	6,631	4,429	10,137	1,370	5,294	903	32,190	4,248	10,063	4,878
Ross	6,650	11,133	1,827	4,344	11.191	1,240	16.134	1,709	5,792	8,699
Sandusky	2,385	3,776	9,462	4,535	3,436	2,134	20,430	3,503	3,775	4,764
Scioto	410	1,152	32	264	738	334	1,691	565	700	324
Seneca	1,018	11,714	19,695	7,990	8,683	3,006	34,620	3,412	12,549	14.378
Shelby	10.948	17,545	9,181	96	6,342	1,377	17,033	288	1.588	5,312
Stark	2.438	2,517	1,821	839	3,553	153	12,609	1,866	6,084	1,202
Summit	1,223	635	932	149	597	121	7,440	655	721	525
Trumbull	122	101	60	39	229	38	4,408	511	64	34
Tuscarawas	726	3,084	504	297	2,534	76	9,105	1,654	3.547	776
Union	4.154	6.873	8,441	168	3.112	343	7.747	608	3.994	3,686
Van Wert	6,371	4,514	10,257	2,243	3,694	1,165	10,959	380	974	2.270
Vinton	86	361	8	258	330	9	552	19	212	335
Warren	2.064	3,512	1,141	1,128	4,952	277	9,560	896	5,981	1,191
Washington	243	1.849	....	60	721	44	6,597	171	308	439
Wayne	4,948	5.538	6.059	1.939	4.454	1,211	17.741	5,637	9.812	4.316
Williams	13,813	8,710	20,865	18,723	2,880	6,322	17,736	4,621	7,866	8,170
Wood	6.149	4.109	15,411	9,859	4,080	2,086	21,372	4,032	5,089	6.708
Wyandot	8,154	6,537	12,976	2,367	7,983	1,906	18,510	1,864	7,520	10,890
Total product	335,272	420,985	462,010	195,972	350,777	90,841	1,032,531	111,210	339,290	342,472

Average product for ten years, 368,136 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF IRISH POTATOES IN OHIO FOR TEN YEARS.

Counties.	Number of Bushels.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Adams	18,814	23,524	14,688	22,263	13,701	18,323	14,339	41,607	11,109	18,084
Allen	43,545	79,705	35,050	54,096	51,029	44,459	23,188	96,243	67,093	99,723
Ashland	91,416	111,043	45,538	94,254	93,509	88,345	62,779	110,031	145,224	93,217
Ashtabula	207,207	204,586	447,711	403,128	236,789	400,765	244,397	387,018	613,805	306,763
Athens	19,399	33,860	19,397	21,779	33,665	32,445	25,399	63,707	30,593	60,332
Auglaize	71,778	107,039	54,071	66,881	45,914	45,952	25,304	145,105	83,388	116,775
Belmont	97,509	105,387	63,129	73,542	90,658	57,129	58,726	71,118	46,414	108,389
Brown	19,874	33,832	14,935	28,296	24,745	38,652	29,013	91,901	49,616	50,425
Butler	72,445	89,490	46,646	90,998	63,276	75,759	63,323	192,155	144,883	121,501
Carroll	42,132	51,167	35,962	61,582	63,610	58,008	54,195	112,880	89,341	60,915
Champaign	23,795	48,408	26,442	35,898	27,485	41,915	21,208	95,268	56,619	105,864
Clark	46,884	73,994	34,238	51,175	49,355	54,574	41,529	114,023	73,560	75,585
Clermont	54,149	75,403	37,657	78,492	69,744	56,034	62,456	124,647	81,737	82,216
Clinton	18,462	34,737	17,544	36,005	37,002	40,297	27,325	80,926	46,365	54,306
Columbiana	201,655	350,709	153,461	181,330	184,534	185,576	149,302	265,009	326,347	169,694
Coshocton	80,089	105,193	61,060	65,112	85,070	71,941	65,896	123,641	115,390	89,596
Crawford	138,725	162,589	91,745	126,445	109,739	123,988	73,451	134,246	228,213	102,915
Cuyahoga	641,831	467,748	704,867	603,554	551,647	743,559	543,867	492,300	770,201	452,298
Darke	85,186	130,244	59,939	120,118	90,034	100,463	59,242	251,336	149,572	170,106
Defiance	79,895	92,443	51,003	122,284	108,318	72,774	51,514	105,928	87,436	90,554
Delaware	34,150	53,105	27,010	23,905	31,619	33,351	20,734	49,222	48,121	82,766
Erie	275,980	263,407	304,553	384,356	263,408	312,730	218,383	313,530	326,118	170,489
Fairfield	98,258	104,047	45,467	67,997	84,054	71,746	54,052	137,465	74,280	111,800
Fayette	2,832	7,280	3,009	3,728	6,651	6,011	10,757	17,240	9,443	15,846
Franklin	155,867	125,206	88,660	68,865	68,766	82,204	75,691	119,545	86,497	176,931
Fulton	102,158	97,312	71,499	191,289	131,068	140,271	88,576	112,681	148,790	112,759
Gallia	15,399	21,493	7,668	17,691	15,205	13,015	19,898	34,002	31,163	49,672
Geauga	187,475	163,721	279,816	293,792	228,170	314,719	225,630	303,396	391,486	194,325
Greene	39,612	63,389	28,508	65,289	51,225	65,063	48,760	95,699	63,470	209,305
Guernsey	43,537	52,955	32,237	29,467	42,216	33,423	33,776	52,423	20,095	45,034
Hamilton	367,060	370,796	195,762	306,568	263,909	202,669	261,545	456,580	282,563	281,924
Hancock	90,660	121,361	81,053	113,617	88,728	80,959	52,139	117,174	116,110	95,114
Hardin	144,427	167,685	66,170	566,621	70,502	98,941	47,392	125,952	481,884	208,507

Harrison	19,206	24,353	18,143	29,184	32,977	27,647	30,256	31,475	35,286	47,117
Henry	70,510	84,677	44,727	111,838	100,657	87,715	64,213	93,829	85,559	113,572
Highland	12,636	23,470	11,245	22,616	20,043	21,862	17,477	59,551	35,152	36,499
Hocking	46,804	66,475	27,915	41,777	54,579	35,481	38,270	76,213	43,057	53,244
Holmes	66,979	84,198	51,699	68,163	79,833	82,123	54,493	114,280	103,516	74,183
Huron	133,374	123,676	114,198	183,712	96,619	170,493	92,544	168,806	246,954	110,475
Jackson	19,378	19,730	10,263	11,752	17,637	11,083	13,791	45,390	15,515	24,764
Jefferson	54,933	71,252	41,311	50,770	58,241	46,224	57,466	96,305	79,009	65,647
Knox	44,372	55,976	27,607	31,611	44,286	55,770	39,236	103,199	108,101	80,383
Lake	151,291	106,220	187,156	183,174	155,542	208,869	166,067	186,031	255,631	162,467
Lawrence	27,739	36,595	18,185	35,636	20,039	17,874	18,633	42,400	24,306	27,417
Licking	100,559	115,380	79,272	80,109	106,814	81,105	69,427	170,258	104,574	136,196
Logan	32,931	49,591	26,050	35,180	25,702	37,856	22,955	63,674	49,411	86,830
Lorain	214,945	198,969	219,306	273,390	186,144	234,986	178,502	210,742	270,800	181,182
Lucas	271,991	296,545	277,480	429,830	280,703	343,516	251,471	335,961	260,356	210,048
Madison	12,743	15,091	9,422	10,879	15,586	15,356	13,372	32,803	14,385	30,679
Mahoning	325,131	209,642	167,348	201,250	172,425	197,760	133,950	260,534	210,881	171,666
Marion	53,373	94,012	46,019	67,496	58,589	57,598	35,823	90,626	97,006	99,745
Medina	299,437	208,279	231,926	299,735	216,759	245,032	178,142	237,196	270,125	148,562
Meigs	44,730	64,462	25,532	60,850	42,305	54,839	52,378	92,278	55,884	86,550
Mercer	52,150	84,502	47,196	42,274	31,835	32,896	23,317	94,787	54,628	72,156
Miami	52,816	98,830	49,722	87,070	71,413	66,449	45,426	180,909	101,089	131,001
Monroe	114,965	139,953	93,139	129,325	121,005	85,368	81,186	77,965	37,130	94,118
Montgomery	59,761	100,646	45,483	77,181	72,305	93,107	58,772	189,518	93,431	118,813
Morgan	37,339	52,420	27,649	26,982	38,204	29,746	29,608	58,963	35,397	53,144
Morrow	85,524	110,956	48,820	68,807	82,940	59,178	55,672	92,307	112,076	90,431
Muskingum	92,066	97,350	46,938	51,750	67,285	50,667	57,078	114,463	82,136	113,779
Noble	59,902	79,589	51,792	33,350	52,563	40,685	35,949	45,793	26,378	48,977
Ottawa	118,935	50,931	35,316	48,677	34,506	36,360	33,258	50,535	58,804	34,557
Paulding	42,460	47,156	30,577	61,103	155,748	31,663	18,171	85,738	63,214	57,514
Perry	41,141	56,666	32,096	42,467	57,580	41,315	41,625	86,165	50,544	53,792
Pickaway	33,629	41,371	20,013	45,968	36,346	30,884	24,299	63,156	20,275	38,592
Pike	35,168	66,428	27,714	33,698	31,765	21,104	29,530	63,625	28,140	91,189
Portage	690,889	601,581	714,431	813,049	712,378	775,471	473,724	637,293	778,784	482,407
Preble	23,067	40,049	22,611	50,707	40,572	53,154	31,611	106,609	66,178	61,891
Putnam	88,075	124,854	63,048	128,987	74,619	80,482	48,615	133,975	99,537	34,341
Richland	162,370	186,386	130,446	186,587	161,448	225,483	113,671	237,819	253,721	158,051
Ross	59,262	76,828	39,946	44,234	48,194	38,889	42,483	107,610	39,823	125,347
Sandusky	213,943	170,052	170,312	245,891	162,899	200,687	140,743	188,396	235,510	160,912
Scioto	81,797	101,580	65,646	75,337	81,045	67,273	58,348	103,940	57,618	95,255
Seneca	150,480	154,878	123,574	175,008	113,655	155,098	82,232	148,827	194,062	147,993
Shelby	44,376	85,035	37,952	57,393	36,202	41,111	25,364	109,525	57,520	70,271
Stark	361,289	404,152	267,908	382,709	314,916	415,051	258,558	412,341	437,378	240,987
Summit	309,805	244,840	266,166	327,643	239,935	349,608	215,308	287,431	316,211	207,741
Trumbull	287,837	222,976	333,400	362,689	318,782	351,131	207,751	453,529	493,047	280,690
Tuscarawas	145,104	188,196	102,261	127,563	139,306	160,579	144,449	274,624	246,514	170,396
Union	14,576	26,646	8,960	6,716	10,572	12,844	12,092	35,317	20,972	45,110
Van Wert	41,852	80,840	39,674	94,011	60,440	43,550	25,393	86,270	58,120	75,175
Vinton	22,139	33,144	13,344	15,440	21,052	23,728	22,446	51,432	27,558	28,665
Warren	24,487	27,175	18,529	33,517	25,520	42,321	36,788	162,799	58,702	48,970
Washington	143,250	140,752	91,820	142,099	122,314	109,693	103,866	117,171	78,869	150,990
Wayne	439,791	385,049	189,821	298,606	241,197	234,325	150,250	274,178	315,879	177,390

COMPARATIVE TABLE SHOWING PRODUCTION OF IRISH POTATOES IN OHIO FOR TEN YEARS—Concluded.

Counties.	Number of Bushels.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Williams	75,025	81,006	41,434	93,283	112,681	86,237	44,184	70,573	79,983	63,886
Wood	119,026	78,592	79,796	133,774	94,274	104,640	70,222	103,283	86,775	95,878
Wyandot	57,980	84,962	34,398	66,627	57,312	67,397	32,361½	80,716	126,330	69,260
Total product	9,997,543	10,507,822	8,296,236	11.313,191	9,203,633	10,097,418	7,286,582	12,906,134	12,557,717	10,069,933
Total area	109,811	113,064	115,600	131,234	118,584	118,165	114,832	153,362	253,884	157,923

Average area for ten years, 138,645 acres.
Average product for ten years, 10,223,620 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF TOBACCO IN OHIO FOR TEN YEARS.

Counties.	Pounds of Tobacco.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Adams	1,681,840	2.465,940	2,217,898	2,718,872	2,131,862	1,828,170	786.098	1,307,617	917,280	2,859,385
Allen	....	....	....	....	....	40	520	....	....	....
Ashland	....	....	....	1,400	....	1,400	2,995	4,800	5,600	2,500
Ashtabula	....	....	....	....	....	....	....	....	....	....
Athens	....	....	....	5,720	2,600	10,300	3.700	6,010	300	8,800
Auglaize	3.800	8.390	12,000	21,200	11,550	30,860	4,100	7.880	6,580	16,600
Belmont	823.282	1,055,562	824,509	762.940	704.452	1,289,763	1,226,297	1,306.728	639,956	892.332
Brown	4.237.900	4,527,058	5.098.122	4,774,309	4,534,064	3,300.029	2,008,930	2,522,900	2,337.186	3.712.431
Butler	735.100	422,430	710,875	713,800	1,029,585	1,035,965	531,662	371,920	468,091	452,305
Carroll	....	....	....	....	....	....	....	....	....	....
Champaign	33.400	52,780	52,190	115,240	55.262	98,080	19,100	16.474	18,400	15,580
Clark	113.450	232,880	185,635	265,860	222,335	251,060	150,260	121,737	14,566	145.141
Clermont	1,897.956	2,056.776	2,335,483	2,984,595	2,476,932	1,597,850	991,950	1,301,950	1,316,965	2,165,843
Clinton	17.700	18,450	57,900	73,040	74,624	102,546	23,590	76,500	16,500	33.500
Columbiana	....	....	....	....	....	....	....	....	50	....
Coshocton	1.000	1,500	1,500	....	....	10	....	....	....	200
Crawford	....	....	....	....	....	....	....	....	215	....
Cuyahoga	....	8.200	....	....	....	....	....	....	....	....
Darke	8,712,814	10,279.035	8,310,165	11,106,872	10,451,175	10,270,356	5,768,440	2,700,049	3,309,618	3,909.870
Defiance	1.500	500	1,500	1,320	3,950	5,650	3,600	3,400	....	2,850
Delaware	....	....	....	....	....	100	....	....	....	....
Erie	....	....	....	....	....	....	80	100	....	....
Fairfield	....	....	....	200	150	....	4	200	800	40
Fayette	....	....	....	500	....	45	....	30	....	....
Franklin	30,000	1,100	....	5,000	....	20	....	20	10	....
Fulton	....	....	....	....	....	....	....	....	....	....
Gallia	360.160	433,766	415,228	700,992	721,720	890,582	235,955	475,400	483,643	506,253
Geauga	....	....	....	....	....	....	24	....	....	75
Greene	176.048	403,058	331.896	461,063	489,975	492,439	190,540	79,650	128,810	214,776
Guernsey	163,959	144.530	133,132	141,720	99,085	240,461	218,945	252,635	99,087	185,285
Hamilton	119,000	124,700	147.260	101,900	189,270	103,422	106,940	174,120	44,599	211,411
Hancock	....	....	7.300	....	....	....	25¼	....	35	....
Hardin	....	....	....	....	....	....	....	....	....	....

COMPARATIVE TABLE SHOWING PRODUCTION OF TOBACCO IN OHIO FOR TEN YEARS—Concluded.

Counties.	Pounds of Tobacco.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Harrison	....	....	....	....	....	....	....	80	....	4
Henry	....	....	....	150	100	120	....	....	....	100
Highland	10,000	2,400	24,350	54,100	33,650	23,270	14,060	9,570	9,000	52,945
Hocking	....	....	....	....	....	400	120	550	....	250
Holmes	....	....	....	100	....	....	75	....	....	300
Huron	....	....	....	....	....	....	....	....	....	....
Jackson	....	....	....	....	....	....	....	....	....	....
Jefferson	....	....	....	....	7,800	....	....	192	....	....
Knox	....	....	....	....	....	10	....	....	50	300
Lake	3,000	25	1,900	....	....	....	650	2,000	4,000	3,900
Lawrence	63,700	54,550	65,946	93,975	70,848	40,297	17,800	23,700	40,530	23,775
Licking	....	....	590	1,000	2,000	....	....	....	142	....
Logan	59	....	....	1,200	16,700	66,000	15	31,048	11,755	27,750
Lorain	....	....	....	....	178	....	....	....	186	....
Lucas	....	200	1,800	....	25	300	....	100	....	....
Madison	....	....	....	....	....	20	....	....	600	600
Mahoning	97	....	....	....	75,210	....	....	....	....	....
Marion	....	....	....	....	....	....	100	....	....	....
Medina	165,500	241,660	206,821	276,608	223,966	238,440	134,500	110,450	180,627	231,471
Meigs	800	7,000	5,400	22,725	23,900	1,900	9,330	10,025	5,000	4,050
Mercer	6,200	24,420	19,270	45,350	30,600	18,200	1,025	....	....	6,394
Miami	3,211,654	3,816,515	2,725,052	3,322,427	3,640,545	3,056,706	1,964,420	1,126,102	903,259	1,234,815
Monroe	745,955	927,760	811,200	778,970	728,515	1,388,350	1,293,479	1,496,205	748,578	1,334,203
Montgomery	8,419,270	12,609,597	9,615,419	10,323,473	13,691,551	12,918,397	7,132,269	5,227,139	5,459,681	6,801,150
Morgan	....	8,500	1,700	39,450	23,852	101,850	60,270	153,525	93,285	283,090
Morrow	....	....	....	....	....	....	....	32	....	....
Muskingum	1,100	1,800	1,200	2,800	....	13,340	3,300	9,200	2,500	4,000
Noble	783,508	1,031,618	917,643	974,656	642,144	1,150,675	833,680	1,321,737	601,408	1,163,432
Ottawa	....	....	....	....	....	....	....	....	....	....
Paulding	....	7,000	13,700	14,800	6,950	4,000	800	620	....	4,020
Perry	1,000	2,000	1,800	3,225	2,000	7,400	1,500	....	3,000	320
Pickaway	....	....	....	....	....	....	....	40	....	....
Pike	19,100	22,600	47,130	50,275	26,070	17,443	22,910	27,900	8,100	30,825

Portage	....	1,960	....	800	....	3,100	1,000	50	....	....
Preble	3,203,455	5,032,959	3,517,182	4,724,452	5,724,404	4,905,350	3,128,000	1,838,148	2,103,300	2,274,123
Putnam	1,000	1,200	1,000	200	50	597	320	70	....	....
Richland	....	....	....	....	....	....	....	....	....	....
Ross	4,200	300	....	....	....	....	....	5,450	2,300	26,800
Sandusky	....	....	....	....	....	....	....	....	....	....
Scioto	213,075	250,500	375,407	406,809	348,315	283,390	182,275	237,160	77,400	365,887
Seneca	....	....	....	....	3,600	500	....	....	....	....
Shelby	43,355	158,344	78,367	388,130	173,230	165,021	37,968	17,000	10,600	35,800
Stark	5,150	2,852	2,200	5,116	1,000	570	4,100	....	950	....
Summit	....	700	100	....	....	....	....	....	....	3,600
Trumbull	....	....	....	....	....	75	....	....	....	....
Tuscarawas	....	....	....	....	....	....	....	200	....	200
Union	....	....	640	2,000	150	....	....	125	125	300
Van Wert	....	....	....	....	....	....	25	....	....	....
Vinton	....	....	....	....	2,200	1,850	190	25	....	....
Warren	2,014,207	2,859,282	2,724,593	3,069,224	3,446,973	3,217,078	1,796,522	1,506,088	4,244,240	1,819,056
Washington	6,070	4,750	2,700	2,200	4,630	54,190	78,934	124,613	72,930	269,119
Wayne	313,425	331,239	349,765	889,225	334,710	306,021	248,315	186,825	209,490	235,112
Williams	....	....	....	....	....	....	....	....	....	....
Wood	....	....	....	....	....	150	....	....	....	....
Wyandot	....	200	....	....	....	....	18	....	....	....
Total product	39,343,870	49,641,586	42,355,378	50,454,983	52,484,457	49,534,158	29,242,225	24,196,189	24,601,327	31,573,098
Total area	50,878	55,322	58,829	67,522	56,242	57,659	40,823	34,608	32,856	41,594

Average area for ten years, 49,633.
Average product for ten years, 39,342,727.

COMPARATIVE TABLE SHOWING PRODUCTION OF BUCKWHEAT IN OHIO FOR TEN YEARS.

Counties.	Number of Bushels.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Adams	10	25	47	72	40	99	158	42	13	4
Allen	2	13	....	186	115	221	188	602	41	235
Ashland	136	665	407	1,378	252	747	2,432	4.508	2.501	815
Ashtabula	52,841	37,866	84,077	44,697	33,974	65,137	55,960	71,929	89,775	49,181
Athens	255	....	28	90	65	....	346	506	280	279
Auglaize	245	396	420	2,624	230	319	1,022	4,909	1,222	1,412
Belmont	160	915	1,182	928	1,344	1,951	1,234	2,017	1,266	248
Brown	142	95	92	28	35	196	156	87	....	20
Butler	60	....	50	37	....	....	56	1,097	14	203
Carroll	65	312	703	1,064	440	1,872	821	3,071	2,936	551
Champaign	19	16	52	1,244	67	809	870	1,171	989	1,340
Clark	52	24	107	226	56	90	172	196	147	244
Clermont	69	91	71	261	153	462	200	231	169	53
Clinton	2	30	195	688	208	148	325	935	237	128
Columbiana	570	1,100	970	1,576	988	2,165	2,058	5,019	6,952	1,722
Coshocton	507	2,595	2,811	4,625	1,156	1,911	1,444	6,025	4,457.	1,075
Crawford	230	120	161	562	163	701	1,090	2,241	904	1,152
Cuyahoga	158	248	404	123	221	84	279	315	1,276	321
Darke	46	202	217	829	534	847	1,354	2,228	820	331
Defiance	1.201	299	301	1,076	2,817	1,915	2,812	2,166	284	1,965
Delaware	340	1,050	612	1,207	383	921	975	1,426	265	516
Erie	3,008	1,933	3,632	14,085	2,428	3,482	4,582	11,342	4,673	4,261
Fairfield	....	71	164	682	147	676	182	762	828	150
Fayette	....	15	....	1,146	....	25	47	385	....	320
Franklin	20	217	93	210	159	801	1,946	2,469	323	927
Fulton	1,233	1,299	2,593	6,014	7,341	5,491	7,208	8,119	4,300	7,408
Gallia	16	192	66	50	68	119	200	272	64	167
Geauga	6,277	4,095	4,912	2,286	1,575	5,028	5,487	6,988	5,975	2,469
Greene	1,110	1,400	45	110	121	129	176	468	50	5
Guernsey	341	2,035	1,583	1,573	1,097	1,617	1,738	2.880	872	885
Hamilton	10	5	24	38	15	176	60	674	30	....
Hancock	27	80	90	570	168	413	1,049	1,009	449	695

Hardin	217	608	51	527	29,358	314	658	1,330	550	1,563
Harrison	18	205	502	901	84	570	241	1.118	983	485
Henry	600	292	548	1,317	2,862	3,567	3,627	3,131	28.426	2,254
Highland	10	212	276	341	189	197	141	508	85	108
Hocking	1,034	3,507	2,942	4,885	1,792	2,137	1,127	2.830	3,623	1,303
Holmes	284	508	257	740	200	762	1,032	4.256	3,727	836
Huron	295	196	50,615	2.483	719	1,956	3,182	4,465	2,437	1,714
Jackson	1.133	1,784	1,991	1.377	1,509	2,254	1,823	1,129	658	206
Jefferson	143	158	405	266	128	760	303	997	972	429
Knox	95	973	1.451	2,807	347	1,043	1,634	10,182	3,510	583
Lake	4.781	2,610	3.560	2,393	1,263	955	917	2.895	3,086	2,138
Lawrence	....	256	....	11	13	93	119	307	161	50
Licking	600	1,847	1,280	2,151	1,380	3,059	2.904	9.928	1.396	900
Logan	87	736	168	2.105	124	813	1,370	2,385	1,287	1,210
Lorain	311	265	741	499	190	333	561	1.092	675	838
Lucas	4,717	3,943	5,020	10,097	13,260	8,327	10,232	10,028	6,799	7,393
Madison	....	48	16	941	61	54	62	278	37	185
Mahoning	1,316	2,100	2.728	2,124	1,628	1,713	2,559	5,135	2.674	1,319
Marion	89	24	12	128	102	543	325	343	434	179
Medina	402	330	685	1,359	30,370	1,050	1,226	4,439	952	373
Meigs	261	579	453	249	107	321	233	242	142	41
Mercer	93	92	98	922	139	389	754	1,909	238	296
Miami	....	36	....	662	55	57	25	261	55	26
Monroe	1,652	9,251	4,925	3,375	4,392	4.675	1,918	5,475	6.688	1,134
Montgomery	....	....	5	20	36	146	20	180	190	48
Morgan	190	1,087	598	533	631	874	518	1,352	1,063	828
Morrow	....	433	429	721	118	1,100	1.049	1.251	495	465
Muskingum	31	174	364	783	372	597	360	607	480	184
Noble	20	431	1.225	895	715	501	365	732	645	28
Ottawa	55	22	650	59	186	257	355	759	530	213
Paulding	952	437	325	2.126	2,423	3.187	4,401	1.700	186	693
Perry	1,070	1,934	2,339	2,627	1.225	2,384	1,148	1,579	907	849
Pickaway	44	....	....	796	45	....	....	42	10	3.838
Pike	1.132	2.065	2,134	2,190	583	1,525	933	1,402	365	794
Portage	3,599	3.228	3,971	5,004	3,540	6.007	9,237	12,327	6,778	2,373
Preble	40	....	....	193	5	151	54	163	12	54
Putnam	247	60	52	568	323	602	1,681	1.933	614	644
Richland	226	727	1.628	980	510	1,414	1,773	3,138	2,679	734
Ross	783	499	1.723	1,105	223	605	272	1,393	247	706
Sandusky	80	496	118	881	347	903	453	2,074	1.265	1.583
Scioto	1.512	1,643	1,532	765	718	1.445	652	1 723	1,767	1.267
Seneca	136	15	82	437	224	279	479	1,006	465	504
Shelby	4	17	75	2.885	268	3.496	1.357	4,777	2.468	1,728
Stark	313	1,235	894	509	701	1,099	1,197	3.329	3.086	690
Summit	1,161	1,473	784	300	313	937	2.027	3,761	3.100	1,027
Trumbull	9,236	5.937	13,612	9,100	5,609	16,693	15,846	24,074	18.546	8.552
Tuscarawas	889	982	936	2.508	939	1.568	1,801	4,694	2,171	1.158
Union	391	964	495	1,307	205	1.197	935	2,327	68	255
Van Wert	46	101	46	705	498	1,357	2.259	795	262	710
Vinton	645	1,009	2.009	1,876	587	1.646	805	1,455	1.650	656
Warren	159	....	127	77	273	195	905	579	56	41

COMPARATIVE TABLE SHOWING PRODUCTION OF BUCKWHEAT IN OHIO FOR TEN YEARS—Concluded.

Counties.	Number of Bushels.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Washington	885	2,067	2,240	2,270	1,276	2,610	1,537	2,492	1,994	913
Wayne	257	136	834	543	259	835	1,116	2,662	2,295	630
Williams	379	424	334	766	2,016	1,779	2,013	1.946	808	948
Wood	760	40	423	2,726	555	1,381	2.823	3,052	806	930
Wyandot	89	127	251	442	251	420	329	801	300	655
Total product	109,651	115,727	225,068	179,642	173,206	191,684	192,300	310,859	258,024	139,203
Total area	7,835	8,617	11,920	14,278	10,408	11,974	14,811	19,932	16,423	12,003

Average area for ten years, 12,820 acres.
Average product for ten years, 189,536 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF FLAX SEED IN OHIO FOR TEN YEARS.

Counties.	Number of Bushels.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Adams	....	....	....	....	....	....	....	....	7	1
Allen	....	....	....	145	....	....	17	185	108	130
Ashland	9,314	16,929	17,205	14,455	22,273	15,283	9,015	12,848	23,708	23,859
Ashtabula	....	....	....	....	....	1	....	502	195	71
Athens	....	....	....	....	....	....	....	....	....	....
Auglaize	....	....	2	7	....	10	126	....	257	20
Belmont	....	5	....	....	....	....	....	....	....	....
Brown	15	53	....	....	27	....	....	....	....	....
Butler	....	....	....	....	90	....	....	500	....	35
Carroll	6	....	....	....	....	....	....	....	18	....
Champaign	....	10	170	....	....	....	30	60	....	208
Clark	....	28	45	645	....	....	....	....	129	5
Clermont	....	....	....	....	....	....	....	....	....	....
Clinton	....	....	100	108	25	....	....	....	....	....
Columbiana	12	....	....	....	....	....	....	....	....	....
Coshocton	5	....	....	....	....	....	....	....	....	2
Crawford	100	75	267	327	250	862	1,022	2,195	3,965	2,691
Cuyahoga	....	....	....	....	....	....	60	60	....	....
Darke	....	....	262	482	100	85	....	188	10	269
Defiance	....	65	....	....	138	56	....	10	....	....
Delaware	....	50	....	....	....	....	....	90	....	....
Erie	8	....	....	....	....	....	....	....	....	16
Fairfield	....	36	....	....	....	....	....	....	....	....
Fayette	12	....	....	....	....	....	62	....	....	12
Franklin	15	....	....	....	....	....	....	....	....	....
Fulton	....	299	501	9	343	....	10	128	385	176
Gallia	....	....	....	....	....	....	10	5	....	....
Geauga	....	10	....	....	....	90	60	336	653	845
Greene	....	....	50	10	....	....	70	266	261	....
Guernsey	....	....	4	21	5	4	12	8	....	3
Hamilton	....	....	....	....	....	....	....	....	....	....

COMPARATIVE TABLE SHOWING PRODUCTION OF FLAX SEED IN OHIO FOR TEN YEARS—Concluded.

Counties.	Number of Bushels.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Hancock	....	....	18	50	....	....	92	152	63	....
Hardin	....	....	85	733	....	5	....	200	132	235
Harrison	....	....	....	....	....	....	....	....	....	4
Henry	10	12	....	12	283	10	54	5	38	....
Highland	96	147	64	31	....	....	....	51	....	....
Hocking	....	....	....	....	....	....	....	4	....	....
Holmes	35	....	....	....	....	....	....	....	....	15
Huron	3.486	6,143	6,026	3,833	1,718	2,952	1,965	6,469	8,738	2.974
Jackson	....	....	....	....	....	....	....	....	2	....
Jefferson	....	....	....	....	....	....	....	5	6	106
Knox	....	....	....	....	....	....	....	40	4	....
Lake	....	....	....	10	....	2,800	....	....	....	....
Lawrence	....	....	....	....	....	....	....	....	....	....
Licking	....	....	....	....	....	....	....	....	6	....
Logan	....	....	20	8	10	....	....	250	9	50
Lorain	1,195	2,778	2,216	1,882	774	913	1,320	2,148	1,235	600
Lucas	375	450	494	....	500	235	245	90	402	454
Madison	....	....	....	....	....	....	....	....	....	....
Mahoning	....	....	....	....	....	....	45	487	332	345
Marion	....	....	....	....	....	....	779	84	40	65
Medina	345	2,645	6.399	4,072	2,719	5,922	4,370	7,611	8,434	6,547
Meigs	....	14	....	....	....	....	....	....	1,991	....
Mercer	16	8	6	....	10	....	13	33	....	....
Miami	20	....	100	360	204	80	880	275	240	624
Monroe	4	....	....	....	7	6	1	36	16	28
Montgomery	....	....	....	28	....	125	7	48	190	189
Morgan	....	....	....	....	19	....	....	....	....	....
Morrow	....	....	....	97	....	....	....	95	101	95
Muskingum	....	13	....	....	....	....	....	....	....	....
Noble	15	....	5	....	....	....	....	....	....	....
Ottawa	....	....	....	....	....	....	....	....	....	....
Paulding	....	....	....	20	7	100	40	95	20	17

Perry	....	....	....	....	....	....	....	....	....	2
Pickaway	....	....	60	....	....	....	....	....	....	....
Pike	....	....	5	....	....	....	....	....	....	....
Portage	5	18	97	134	90	327	404	633	796	314
Preble	....	66	191	1,085	....	225	344	232	491	907
Putnam	....	25	....	9	....	11	2	....	....	....
Richland	530	1,629	1,434	1,573	1,086	3,012	1,415	4,900	4,797	2,296
Ross	....	....	....	....	....	....	....	....	....	....
Sandusky	....	....	....	....	....	....	....	....	....	37
Scioto	....	....	....	....	....	....	....	28	20	....
Seneca	....	32	120	4	....	220	80	202	41	202
Shelby	....	....	....	448	84	120	277	111	....	1,166
Stark	22	....	....	....	5	2	7½	20	66	13
Summit	....	....	....	....	....	....	....	....	....	100
Trumbull	....	....	....	....	....	319	518	1,792	3,106	2,286
Tuscarawas	....	....	....	....	....	....	....	....	26	7
Union	....	....	....	....	....	....	6	....	....	....
Van Wert	....	150	90	100	20	60	15	....	60	60
Vinton	....	....	....	....	....	....	2	30	....	....
Warren	....	....	....	90	....	....	....	....	....	....
Washington	2	....	....	....	....	....	4	....	....	4
Wayne	480	1,580	1,916	2,237	1,117	2,412	2,261	3,948	5,677	4,824
Williams	....	....	....	....	....	....	....	....	....	....
Wood	....	....	....	85	75	60	....	150	418	360
Wyandot	15	....	36	....	....	....	....	....	....	100
Total product	16,138	33,270	37,988	33,110	31,979	36,307	25,640	47,605	67,223	43,302

Average product for ten years, 37,256 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF FLAX IN OHIO FOR TEN YEARS.

Counties.	Pounds of Fiber.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Ashland	851,457	1,187,045	1,155,800	800,203	1,365,500	766,360	552,500	986,550	838,407	1,464,600
Ashtabula	......	......	......	......	......	......	......	3,300	......	......
Auglaize	......	......	......	7	......	......	......	......	......	......
Brown	......	73	......	......	......	......	......	......	......	......
Champaign	......	30	......	......	......	......	......	......	......	......
Crawford	......	......	......	4,005	400	18	5	8,000	70,000	......
Darke	......	......	......	......	......	......	......	......	......	5,700
Fayette	......	......	......	......	......	14	......	......	......	......
Geauga	......	......	......	......	......	......	......	5,006	21,930	41,000
Henry	......	20	......	......	......	......	......	......	6,000	......
Highland	......	......	1,500	......	......	......	......	......	......	......
Huron	238,500	484,200	401,300	241,500	287,300	121,400	90,115	250,680	502,804	154,208
Knox	......	......	......	......	......	30	......	......	......	......
Lake	......	......	......	......	......	320	......	......	......	......
Lorain	92,500	347,900	182,800	108,500	31,875	16,500	59,010	41,500	45,000	21,700
Lucas	60	......	......	......	......	10	......	......	158	......
Mahoning	......	......	......	......	......	......	......	7,000	6	......
Medina	2,003	48,094	83,700	121,700	55,400	63,019	37,514	121,200	232,300	324,900
Miami	......	2,000	......	......	1,006	6	84,800	22,000	3,000	21,400
Monroe	15	......	......	......	......	......	......	......	......	......
Montgomery	......	......	......	......	......	......	......	100	......	9,000
Portage	......	......	2,000	6,000	4,000	11,087	29,500	56,400	25,000	19,800
Preble	......	20	......	......	......	......	......	......	......	10,000
Putnam	......	......	......	......	400	50	......	......	......	......
Richland	36,000	107,800	58,800	260,000	56,800	43,000	42,650	275,400	215,100	93,000
Seneca	......	......	......	......	......	......	......	10	435	......
Shelby	......	......	......	10,000	......	6,000	1,603	......	......	15,000
Stark	......	......	......	......	......	......	4	......	......	......
Trumbull	......	......	......	......	......	......	19,000	165,700	102,235	108,300
Warren	......	......	20	......	......	......	......	......	......	......
Wayne	24,470	85,903	67,300	240,100	36,100	135,370	126,600	275,300	258,560	657,800
Totals	1,245,005	2,263,085	1,953,220	1,792,015	1,838,781	1,163,184	1,013,301	2,218,146	2,320,935	2,946,403

Average product for ten years, 1,875,408 pounds.

COMPARATIVE TABLE SHOWING PRODUCTION OF BROOM CORN IN OHIO FOR TEN YEARS.

Counties.	Pounds of Broom Brush.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Adams	600	600	350	15,305	1,800	....	2,387	500	600	300
Allen	....	2,000	2,000	1,100	....	30	....	....	....	50
Ashland	....	....	350	2,540	800	800	400	3,110	3,900	1,800
Ashtabula	....	....	....	....	....	....	....	....	450	....
Athens	....	400	....	....	....	....	....	....	....	....
Auglaize	3,000	3,500	3,090	150,375	86,110	100,700	162,000	90,100	248,020	175,750
Belmont	....	1,388	1,125	4,121	2,000	2,000	2,320	5,008	4,320	2,468
Brown	1,008	10,600	4,503	6,595	300	2,714	2,693	550	3,300	2,380
Butler	6,000	3,400	6,550	61,050	6,000	7,500	13,800	33,000	20,500	24,400
Carroll	....	84	560	350	....	....	....	....	....	....
Champaign	6,000	30,200	16,100	56,800	345,305	47,500	21,650	....	7,600	82,550
Clark	....	....	1,000	15,640	900	....	....	....	....	....
Clermont	....	2,200	2,300	6,325	....	....	....	....	2,000	4,350
Clinton	....	....	....	175	150	....	1,610	....	400	1,000
Columbiana	....	....	....	....	100	....	800	350	247	....
Coshocton	....	2,000	25	....	50	....	....	....	30	....
Crawford	....	....	625	315	....	....	1,000	....	....	....
Cuyahoga	....	100	40	....	....	....	....	....	....	....
Darke	6,000	14,100	28,700	71,070	39,150	41,360	3,650	17,022	36,520	58,210
Defiance	....	5,000	....	6,000	....	....	3,200	200	....	....
Delaware	....	....	500	600	....	3,000	....	....	....	2,300
Erie	....	600	2,500	3,000	....	....	4,000	10,600	2,000	15,000
Fairfield	....	262	400	6,780	700	....	350	145,250	801	1,100
Fayette	....	....	....	....	3	8,000	6,000	300	4,200	18,000
Franklin	1,600	13,100	6,540	19,050	6,950	39,820	4,550	6,000	4,500	28,550
Fulton	....	....	7,011	9,042	11,400	500	1,700	2,000	....	....
Gallia	3,200	700	4,000	2,025	5,495	4,600	....	3,600	....	135
Geauga	50	....	....	....	....	....	....	1,400	....	....
Greene	....	4,650	5,650	29,195	700	....	500	4,000	....	8,000
Guernsey	400	400	900	1,400	630	175	800	....	....	....
Hamilton	3,500	3,500	2,364	8,117	18,000	82	....	1,300	12,800	7,000

COMPARATIVE TABLE SHOWING PRODUCTION OF BROOM CORN IN OHIO FOR TEN YEARS—Concluded.

Counties.	Pounds of Broom Brush.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Hancock	....	....	6,000	16,020	88	....	520	3,000	....	....
Hardin	....	60,000	800	5,720	....	....	1,000	310	200	22,000
Harrison	....	....	732	238	....	....	....	....	100	....
Henry	....	....	....	435	1,200	1,000	4,000	4,550	....	....
Highland	....	6,200	8,430	9,500	3,110	200	8,000	....	900	2,600
Hocking	75	1,470	1,640	4.335	2,400	1,000	2,090	450	3,400	2,800
Holmes	....	1	1,725	3,301	10	600	2,000	....	400	2,100
Huron	3,250	6,000	5,400	5,675	....	....	....	....	....	1,200
Jackson	....	....	....	....	....	....	....	....	....	....
Jefferson	....	150	....	....	....	....	....	....	....	2,209
Knox	....	....	....	80	....	....	....	....	1,910	....
Lake	....	....	....	....	....	....	....	....	4,000	....
Lawrence	200	....	....	475	....	....	3,700	2,427	3,000	1,500
Licking	5,600	8,100	3,000	12,387	12,800	2,500	3,150	8,010	2,500	5,200
Logan	....	....	....	8,500	....	....	....	....	27,000	22,600
Lorain	....	....	....	....	....	....	3,809	....	2,400	....
Lucas	....	....	25	800	....	....	....	5,000	....	1,500
Madison	1,600	22,000	....	....	....	....	....	....	2,000	....
Mahoning	....	....	....	100	15	60	....	....	....	....
Marion	60,000	10,100	5,700	25,340	14,550	....	....	5,639	....	....
Medina	11,000	600	1,950	1,800	....	....	....	....	1,400	....
Meigs	6,000	3,980	4,000	16,756	276	....	1,400	1,045	5,930	....
Mercer	....	3,075	1,500	11,074	1,080	80	2,100	3,000	14,200	6,000
Miami	1,750	4,150	22,450	42,390	10,630	6,000	4,000	....	3,625	14,500
Monroe	....	56	....	2,312	472	345	25	145,400	50	100
Montgomery	800	28,090	23,600	19,300	44,900	21,500	1,400	....	25,600	33,000
Morgan	....	190	1,450	7,500	260	1,450	310	....	540	35
Morrow	....	....	1,800	100	....	....	....	....	....	1,550
Muskingum	....	400	85	140	60	....	300	500	100	....
Noble	....	....	2,000	2,000	....	900	2,000	....	502	471
Ottawa	....	111	....	....	....	....	....	....	....	....
Paulding	3,050	....	....	3,300	400	400	....	....	....	....
Perry	....	....	1,700	1,423	....	....	900	....	....	75

Pickaway	200	4,900	52,000	185,300	....	....	....	....	66,000	61,000
Pike	800	400	3,750	4,925	....	1,000	2,000	300	200	2,000
Portage	....	....	....	....	....	....	700	....	200	....
Preble	4,600	10,600	16,000	27,530	3,180	2,000	4,820	67,000	9,300	3,842
Putnam	....	....	96	2,800	20	36,000	15,000	700	500	40
Richland	....	....	2,100	390	....	100	700	1,460	....	5,675
Ross	....	8,000	8,700	52,700	8,400	500	3,000	....	....	200
Sandusky	800	1,000	1,600	1,200	....	....	....	....	109	....
Scioto	1,200	250	4,800	15,200	280	200	2,070	1,000	3,944	....
Seneca	....	....	....	600	....	....	....	700	....	....
Shelby	6,200	3,400	4,354	37,278	11,000	4,000	4,400	7,200	....	99
Stark	....	....	6,180	....	3,832	50	....	....	....	800
Summit	....	500	53	....	250	....	....	....	....	1,200
Trumbull	....	100	100	....	1,000	....	....	....	....	....
Tuscarawas	....	500	2,005	2,590	664	2,000	8,000	3,090	1,500	....
Union	....	150	3,000	8,287	5,055	2,000	2,500	7,850	5,600	2,354
Van Wert	....	90	160	17,300	8,000	....	....	....	250	....
Vinton	....	....	....	800	....	....	100	....	....	1,150
Warren	....	100	....	11,075	3,600	....	....	1,000	....	....
Washington	....	....	170	2,062	1,000	600	....	....	....	200
Wayne	....	530	....	5,285	400	....	....	50	1,755	1,105
Williams	....	....	2,125	....	2,000	....	....	....	400	1,800
Wood	....	....	3,200	1,900	....	....	....	....	1,500	....
Wyandot	....	1,100	....	2,000	2,000	900	....	....	....	....
Total product	138,483	288,080	301,563	1,057,693	669,475	344,166	317,404	593,971	543,203	637,248
Total area	227	686	726	2,228	907	748	781	979	1,053	1,125

Average area for ten years, 946 acres.
Average product for ten years, 538,883 pounds.

COMPARATIVE TABLE SHOWING USE OF COMMERCIAL FERTILIZERS FOR TEN YEARS.

Counties.	Pounds used.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Adams	3,311,023	3,211,435	2,919,220	2,931,140	3,574,714	3,026,600	2,268,462	2,101,680	2,381,250	2,569,700
Allen	415,800	398,000	328,400	340,500	443,040	150,190	104,924	180,475	369,900	273,100
Ashland	2,842,200	2,397,610	2,191,350	2,419,320	2,697,880	2,657,880	2,095,100	1,382,973	1,751,900	1,401,600
Ashtabula	6,877,055	5,478,807	4,419,249	3,827,922	4,290,050	4,290,760	3,999,040	3,468,633	4,668,300	3,690,504
Athens	835,500	1,371,910	1,103,541	1,626,770	1,796,700	1,844,100	1,609,405	1,414,960	1,709,990	1,104,640
Auglaize	1,128,900	833,550	344,210	183,990	394,450	83,100	58,600	25,500	19,800	4,100
Belmont	1,817,200	2,054,865	1,794,244	2,221,540	1,913,426	1,726,742	2,140,275	1,777,607	1,623,377	1,082,648
Brown	1,965,797	1,938,785	1,627,582	1,717,572	4,079,375	3,640,480	1,218,577	1,038,700	1,671,600	1,839,765
Butler	750,050	995,900	317,940	185,405	1,064,300	493,840	214,100	143,250	145,450	186,625
Carroll	1,666,360	1,671,900	1,556,340	1,177,753	1,678,730	1,899,281	1,703,125	1,213,670	1,053,103	852,648
Champaign	2,723,700	2,526,150	1,844,200	1,586,350	2,691,482	1,410,980	841,820	788,630	1,354,070	694,750
Clark	1,693,050	1,591,200	908,360	883,970	1,341,070	1,034,668	646,800	396,708	578,500	246,016
Clermont	1,220,237	1,328,050	1,160,755	1,040,330	1,205,660	1,032,190	753,600	649,535	1,122,980	995,718
Clinton	2,665,690	2,623,164	1,280,500	764,300	1,514,200	810,263	665,048	336,560	795,230	420,000
Columbiana	3,543,110	3,171,208	3,182,900	3,721,414	3,982,220	3,399,088	3,255,009	2,763,300	2,563,700	2,183,950
Coshocton	2,176,716	2,171,770	1,457,665	1,239,765	1,891,700	1,461,990	1,163,050	827,454	1,286,006	760,186
Crawford	1,915,280	1,703,200	1,218,523	1,357,220	1,511,020	1,327,400	1,067,438	711,020	1,116,918	707,600
Cuyahoga	3,995,200	3,827,206	3,838,160	11,955,470	4,470,300	3,610,600	2,984,390	3,539,340	3,351,100	3,974,950
Darke	1,591,600	1,369,520	716,975	783,340	1,997,157	914,138	694,410	582,515	926,900	587,980
Defiance	98,700	65,060	90,500	76,500	67,200	75,300	57,450	32,000	46,500	45,320
Delaware	1,160,280	1,007,520	1,043,086	978,863	1,189,350	788,100	237,456	295,000	665,680	407,430
Erie	2,104,000	1,277,350	1,231,900	812,730	1,460,350	903,870	674,760	683,290	536,501	344,500
Fairfield	4,101,710	4,847,820	2,876,020	2,579,480	4,186,150	2,755,650	1,885,490	1,408,600	2,503,250	1,394,252
Fayette	2,558,300	2,948,200	2,525,115	1,450,100	1,829,450	1,573,471	782,171	596,436	745,700	406,800
Franklin	2,479,900	1,471,528	922,620	655,400	723,500	296,350	200,701	252,750	621,375	273,816
Fulton	109,550	76,900	93,600	147,425	125,380	151,250	104,900	28,900	86,100	102,750
Gallia	1,122,850	1,119,100	1,825,230	2,051,730	2,318,660	2,341,521	2,479,963	1,750,005	1,654,000	1,298,476
Geauga	2,709,850	2,989,500	2,526,400	2,852,840	2,626,425	2,391,347	2,313,150	1,882,823	2,298,515	1,951,406
Greene	1,953,950	1,662,900	738,900	622,100	859,250	529,400	261,940	123,300	575,900	332,620
Guernsey	1,555,350	1,907,895	1,601,358	1,503,190	2,039,340	2,136,725	1,789,000	1,402,200	1,681,505	987,435
Hamilton	40,200	....	....	143,231	....	....	....	....	....	....
Hancock	666,000	805,600	615,350	456,250	738,800	494,000	231,350	263,555	449,340	213,400

Hardin	316,481	575,700	352,850	415,700	279,300	146,900	34,850	100,200	175,900	65,400
Harrison	832,385	898,700	659,001	674,300	897,780	810,421	1,316,690	726,105	737,638	487,350
Henry	74,900	59,369	93,052	82,150	72,240	70,100	40,300	26,900	45,600	8,350
Highland	6,835,633	4,596,340	3,679,770	2,868,200	3,300,780	3,848,215	3,251,640	2,397,020	3,149,200	2,011,750
Hocking	1,751,007	1,719,876	1,618,250	1,578,385	2,357,840	2,356,851	2,027,768	2,002,923	1,622,515	1,402,640
Holmes	1,894,100	1,849,383	1,746,250	1,263,950	1,702,830	2,120,800	1,388,720	1,210,950	1,408,280	667,224
Huron	3,899,270	4,200,410	3,373,021	2,590,950	4,068,079	2,868,650	2,794,010	2,014,068	2,735,670	1,939,160
Jackson	1,394,600	2,187,610	1,582,400	2,004,319	2,380,320	1,857,810	1,934,568	1,484,910	2,086,300	1,469,915
Jefferson	1,440,190	1,317,040	1,067,340	994,450	1,151,650	1,422,910	1,447,120	1,221,682	1,601,339	899,400
Knox	3,080,100	2,402,070	2,390,350	2,699,220	3,224,630	2,402,450	1,367,825	1,405,140	2,110,998	2,041,318
Lake	1,547,755	1,435,200	1,730,900	1,129,500	1,743,790	1,117,600	550,429	681,700	966,400	1,066,800
Lawrence	359,800	315,006	454,960	520,627	554,190	415,800	205,350	211,125	162,995	85,600
Licking	3,262,650	3,081,550	2,333,950	2,330,497	3,853,490	2,297,390	1,346,860	1,104,810	2,013,290	977,150
Logan	1,368,960	1,276,300	661,550	582,500	1,215,956	382,200	193,890	161,300	160,200	217,750
Lorain	5,895,890	3,557,700	3,646,110	2,672,400	2,192,506	3,074,430	2,517,699	1,740,420	2,384,951	1,380,519
Lucas	138,500	106,280	72,400	72,900	250,510	147,500	81,400	118,700	192,900	178,150
Madison	370,800	599,064	217,000	117,100	173,945	60,600	3,000	....	44,000	1,000
Mahoning	3,545,154	4,011,274	3,926,690	3,286,717	2,574,465	3,673,980	3,992,194	2,965,486	4,172,897	2,543,729
Marion	462,100	99,530	320,215	255,900	331,100	257,900	81,700	90,910	114,012	16,100
Medina	6,035,900	5,532,950	5,065,486	5,248,250	669,380	5,267,500	4,399,290	3,257,420	4,417,645	3,062,000
Meigs	1,698,610	1,686,792	2,395,118	2,616,850	2,762,590	2,931,254	2,378,017	1,955,889	2,407,860	1,525,990
Mercer	349,000	320,300	251,200	134,500	178,150	102,100	68,100	8,500	26,900	5,100
Miami	1,577,300	2,007,400	1,453,830	1,373,080	2,298,280	1,310,426	696,650	672,460	661,043	397,160
Monroe	2,053,550	2,277,100	1,735,100	1,627,468	4,850,551	2,321,430	1,890,260	1,585,502	1,540,260	1,053,431
Montgomery	3,512,400	3,584,425	2,666,660	1,915,300	3,326,597	2,391,778	2,175,490	1,437,850	1,525,930	997,010
Morgan	1,923,300	2,195,700	1,935,000	1,816,257	2,368,800	2,304,923	2,370,650	1,942,650	2,432,358	1,743,561
Morrow	2,796,490	2,310,680	1,696,020	2,255,210	2,745,410	2,323,896	1,811,375	856,191	1,669,270	947,100
Muskingum	2,908,100	2,874,550	2,632,780	2,629,010	3,513,910	2,832,165	3,258,748	2,648,795	2,892,991	1,502,046
Noble	1,104,354	1,426,800	1,142,926	964,400	1,259,315	1,067,016	1,000,100	1,090,089	1,186,620	470,310
Ottawa	2,000	8,000	2,200	3,800	5,700	1,400	7,400	600	5,800	2,500
Paulding	5,000	....	....	2,190	1,700	14,243	1,700	4,920	5,300	....
Perry	3,543,217	3,523,820	2,988,770	2,654,900	3,835,460	3,650,810	3,437,350	2,751,630	3,033,916	2,115,580
Pickaway	3,326,967	3,746,290	1,962,860	1,934,100	2,244,200	587,913	452,700	543,050	378,500	184,044
Pike	1,633,920	2,434,970	1,715,964	1,919,798	2,773,350	2,680,680	1,917,743	1,771,050	1,522,140	1,547,080
Portage	5,043,600	4,779,116	5,128,260	4,257,770	3,636,760	3,451,854	3,698,352	3,208,740	3,476,300	2,778,452
Preble	6,003,590	6,472,252	5,240,950	4,093,285	5,992,850	4,131,015	3,406,290	3,581,750	3,943,100	3,285,450
Putnam	5,500	21,750	....	9,500	2,800	6,000	2,600	....	5,000	2,900
Richland	2,979,240	2,849,100	2,817,150	2,645,961	3,540,495	8,341,551	2,745,460	1,748,700	2,775,207	1,285,430
Ross	3,136,759	3,565,257	2,127,550	1,751,290	3,608,580	2,156,360	1,335,642	1,352,850	1,608,255	1,504,360
Sandusky	506,750	760,860	300,762	180,900	658,700	434,100	284,400	272,085	181,226	121,850
Scioto	2,520,090	2,570,700	3,092,974	2,836,000	3,033,800	1,984,505	1,526,890	1,913,312	1,607,544	1,319,295
Seneca	4,194,650	4,013,286	3,265,950	2,196,480	3,606,934	2,390,500	1,900,840	1,458,930	2,623,150	969,900
Shelby	1,164,850	1,417,250	690,029	662,200	1,476,300	582,510	361,570	533,670	731,750	221,950
Stark	4,560,690	4,224,185	3,899,847	3,301,750	3,253,025	3,535,770	2,268,469	2,157,900	2,695,854	1,913,388
Summit	3,497,400	3,020,780	3,578,950	3,207,000	3,445,990	2,781,627	2,337,740	1,613,981	165,105	1,302,750
Trumbull	5,072,139	3,218,700	3,532,714	3,322,727	3,251,152	3,320,628	2,915,942	2,427,010	3,533,860	2,802,490
Tuscarawas	1,554,318	1,564,780	1,380,500	1,095,122	1,706,576	1,573,450	1,209,200	1,054,430	1,117,375	755,485
Union	777,300	511,196	234,100	455,405	579,575	168,350	62,900	84,050	153,900	339,600
Van Wert	....	....	....	2,000	....	1,000	1,600	....	600	1,000
Vinton	1,115,500	1,288,875	1,108,500	1,121,410	1,997,590	1,964,350	1,407,600	1,294,950	1,589,939	1,152,383
Warren	1,398,140	1,399,350	825,548	65,300	953,600	870,900	562,750	392,150	837,200	653,300

COMPARATIVE TABLE SHOWING USE OF COMMERCIAL FERTILIZERS FOR TEN YEARS—Concluded.

Counties.	Pounds used.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Washington	3,456,730	3,400,987	3,495,070	5,997,240	5,170,510	4,617,730	3,375,175	3,294,850	4,260,500	3,025,166
Wayne	6,537,870	6,900,825	6,036,462	5,895,201	5,516,148	4,503,060	3,560,698	3,152,538	4,128,876	2,752,086
Williams	164,200	93,300	128,200	79,825	235,000	175,550	63,300	116,700	235,340	52,200
Wood	387,100	232,800	366,120	403,500	725,940	518,300	453,400	319,300	333,380	525,700
Wyandot	1,045,310	1,027,450	696,400	643,900	710,500	574,750	217,516	153,700	348,480	180,000
Totals	189,857,217	182,894,581	153,816,702	149,752,554	178,926,948	152,190,375	123,146,474	102,383,910	126,297,999	91,290,340
Total cost	$1,784,788	$1,764,445	$1,665,610	$1,482,390	$2,299,136	$1,543,915	$1,481,583	$1,168,657	$1,529,088	$1,162,981

Average number of pounds for ten years, 145,055,710.
Average cost for ten years, $1,588,259.

COMPARATIVE TABLE SHOWING PRODUCTION OF WOOL IN OHIO FOR TEN YEARS.

Counties.	Pounds Shorn.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Adams	28,105	34,170	38,247	44,800	43,672	49,291	39,021	37,878	60,870	65,518
Allen	62,852	58,951	85,797	122,746	104,950	101,433	77,012	76,141	93.728	130,117
Ashland	206,233	199,220	212,363	209,384	245,615	312,500	169,597	203,188	189,455	218,256
Ashtabula	42,671	53,096	60,939	84,189	86,941	95,031	90,381	77,075	11,799	109,793
Athens	194,092	223.510	266.529	241.937	271,610	244,080	196,726	215,524	292.028	361,205
Auglaize	39,604	41,392	51,515	52,137	54,598	58,756	49,405	53,662	68.827	85,365
Belmont	407,696	340,595	380,797	407,023	426,580	387,709	348,934	359,787	452,450	553,076
Brown	33,552	35.737	52,579	56,980	60,240	53.060	49,705	41,270	58.635	59,686
Butler	35,948	38.295	37,169	46,408	36,797	37.791	25.832	25,615	37,997	40.128
Carroll	293,894	285,676	336.840	329,045	343,829	324,576	326,937	314,263	380,926	466,152
Champaign	93,830	89,522	119.319	128.017	126.343	126,897	128,211	104,085	194,617	171,499
Clark	355,472	99,579	114,949	112.222	99.718	153,424	120.487	142,509	205.945	202,824
Clermont	12,079	19.053	28,776	34,340	26,691	33,582	25,554	24,811	27,456	31,110
Clinton	98,868	104,528	112,815	138,618	122,750	132,597	97,317	115,515	4,615	154,632
Columbiana	112,175	122,708	167,791	169.436	181,462	176,251	155,007	170.504	201,560	235.916
Coshocton	505,728	456,812	473,131	445,601	428,255	352.528	404.367	463,164	533,410	580,978
Crawford	214,644	208,226	220,206	228,378	177,393	220,367	199,646	201,365	220.954	223,891
Cuyahoga	22,705	29.596	28,457	26,949	30,982	31,282	29,773	27,188	31,680	34.233
Darke	22.953	29,285	31.171	39,620	39,960	38.301	28.031	24,013	36.032	49,762
Defiance	66,422	70,421	78,156	80,503	76,257	74,626	62,783	71,401	72,826	81,042
Delaware	181,386	234,583	243,245	230,806	252,780	221,301	186,144	210,081	262,103	323,385
Erie	42,225	59,474	67,367	64,621	69,572	63,289	59,675	65,514	75.952	75,379
Fairfield	59,561	66,819	71.324	77,127	87,511	91,616	56,350	58,098	81.434	132,584
Fayette	36,189	35,958	49,850	51,171	33,199	37,537	49,655	44,315	69,980	81.906
Franklin	42,351	50,781	49,988	43,255	52,330	57,571	46,748	44,271	54,448	55,828
Fulton	70,011	82,581	105,710	119,624	102,542	127,934	110,902	96,385	96,278	154,899
Gallia	36,688	43,173	53,338	57,537	61,700	72,843	76,464	61,945	74,951	90,473
Geauga	27,535	39,415	49,863	53,826	63,852	82,311	71,056	66,335	73,155	95,647
Greene	82,988	98,246	123,998	104,916	107,164	94,138	99,616	91,028	131,087	136,163
Guernsey	358,805	377,626	443,275	446,661	432,097	398,901	355,240	378,170	439.496	540,090
Hamilton	6,210	3,039	6,605	5,380	3,379	6,024	6,272	....	6,938	8,727
Hancock	167,824	170,155	216,779	197,056	192,938	194,200	171,988	155,955	201,755	219,393
Hardin	153,483	137,012	141,815	158,254	140,341	155,790	45,158	154,243	173,476	210,119

COMPARATIVE TABLE SHOWING PRODUCTION OF WOOL IN OHIO FOR TEN YEARS—Concluded.

Counties.	Pounds Shorn.									
	1903.	1902.	1901.	1900.	1899.	1893.	1897.	1896.	1895.	1894.
Harrison	676,202	574,998	595,545	570,575	540,864	580,209	562,095	539,373	676,295	812,750
Henry	33,062	36,548	40,734	47,672	44,841	49,356	41,028	36,505	52,332	96,426
Highland	54,092	75,950	115,618	105,851	110,726	109,426	84,205	87,176	114,380	126,252
Hocking	77,642	69,505	88,924	76,176	87,109	86,158	83,317	97,560	102,325	141,630
Holmes	82,173	88,410	107,969	118,367	123,153	142,832	118,686	148,219	148,645	183,859
Huron	317,839	310,231	351,575	313,015	354,720	283,336	284,424	275,803	297,408	334,188
Jackson	24,159	25,619	35,414	32,678	41,820	41,888	44,014	61,257	65,153	70,813
Jefferson	227,873	279,106	324,503	313,546	335,548	314,497	310,654	290,035	354,508	432,182
Knox	670,670	531,337	636,745	487,947	503,681	498,445	457,119	460,255	529,881	574,810
Lake	18,053	14,809	29,504	30,708	25,981	24,688	32,918	38,138	38,457	48,248
Lawrence	3,323	5,681	6,772	9,440	5,681	11,348	10,165	11,131	12,085	20,809
Licking	566,531	594,251	519,917	445,798	534,616	543,343	470,768	527,657	584,445	702,301
Logan	161,867	159,094	175,368	148,441	206,580	176,567	237,135	155,657	200,477	250,431
Lorain	94,754	106,101	130,316	128,508	118,142	113,695	115,431	125,062	126,229	159,756
Lucas	8,314	9,639	10,971	14,342	15,618	13,416	14,290	12,426	16,651	18,981
Madison	49,084	55,779	81,536	101,683	100,981	150,909	164,085	144,390	189,896	213,181
Mahoning	98,461	83,723	111,351	122,254	115,545	132,501	133,325	145,645	218,210	224,929
Marion	260,585	272,410	372,143	360,073	300,818	360,904	317,326	328,133	340,669	391,407
Medina	122,864	121,472	167,779	180,371	181,775	180,121	170,083	159,538	192,333	217,140
Meigs	125,147	118,421	155,792	138,332	143,300	143,743	132,118	137,653	216,315	239,055
Mercer	45,935	47,953	63,264	61,771	58,840	62,504	48,882	38,049	49,194	70,037
Miami	7,357	10,339	17,095	19,239	13,179	20,255	19,570	19,488	21,750	28,572
Monroe	56,006	60,734	77,222	87,280	94,018	92,446	70,686	71,673	108,718	155,480
Montgomery	9,360	9,999	8,249	8,932	11,711	15,400	11,713	7,916	13,033	19,060
Morgan	330,456	357,027	404,740	409,002	380,376	339,835	312,424	334,887	435,234	506,300
Morrow	423,541	389,462	367,592	348,507	370,108	348,115	341,632	322,291	368,913	452,859
Muskingum	461,199	459,276	541,340	500,502	458,708	450,004	441,585	472,490	540,753	567,953
Noble	280,199	298,045	343,522	292,775	302,211	258,796	232,378	243,583	343,803	424,738
Ottawa	23,954	28,681	27,304	24,397	23,935	28,259	27,160	27,860	33,038	36,344
Paulding	32,370	38,192	47,429	40,518	35,963	35,192	24,015	19,153	29,651	29,368
Perry	133,946	128,001	151,056	153,238	144,170	143,651	131,731	156,250	196,777	224,612
Pickaway	30,548	51,701	40,489	50,416	59,604	35,951	38,315	45,628	71,549	....
Pike	10,007	13,667	16,693	20,212	16,311	20,547	21,761	22,435	27,616	32,038

Portage	89,983	99,099	120,195	141,814	126,665	122,835	118,615	120,350	155,640	182,617
Preble	19,050	20,595	26,399	32,247	34,575	39,887	31,584	33,159	35,359	44,431
Putnam	45,510	50,618	57,420	64,454	43,257	53,571	49,363	34,845	55,330	61,903
Richland	182,576	180,113	205,737	192,620	192,336	218,367	164,947	163,781	215,003	230,000
Ross	26,820	30,261	32,291	46,451	67,999	55,115	53,111	46,679	68,542	63,811
Sandusky	73,734	74,499	75,898	81,806	82,014	83,572	85,016	65,936	105,756	117,395
Scioto	5,018	5,025	7,225	5,511	5,554	5,768	5,508	6,297	8,654	7,776
Seneca	179,776	192,198	522,593	182,681	177,127	174,341	145,419	162,462	204,117	202,496
Shelby	20,899	26,383	39.876	39,859	40,480	36,368	29,130	28,905	47,185	33.822
Stark	80,752	85,235	102,874	117,935	124,765	136,455	112,335	130,354	158,771	194,159
Summit	29,015	34,360	49.286	51,532	40,961	48,618	44,759	41,179	59,435	65,306
Trumbull	71,316	80,880	109,574	137,088	134,121	143,291	135,160	140,458	179,270	211,540
Tuscarawas	144,615	143,737	155,922	158,758	155,420	151,658	142,789	151,606	202,810	262,672
Union	182,522	178.228	216.262	252,422	252,370	203,216	194,238	190,750	234,934	273,134
Van Wert	41,512	63,594	72,707	83,240	61,674	74,896	50,665	43,495	74,037	56,585
Vinton	92,981	96,741	105,460	90.083	80,062	104,481	98,716	110,548	136,158	150,964
Warren	27,879	34.333	46.366	50,763	64,112	70,676	59,385	61,164	69,788	68,108
Washington	144,973	162,764	191,940	101,682	198.705	199,010	183,583	296.001	267,207	349,428
Wayne	90,103	107.773	127,400	131,031	125.543	133,238	116,1.1	107,401	136,397	153.415
Williams	164,225	174,932	163,905	157,452	153,175	166,295	136,522	135,849	149,616	162,474
Wood	52,661	61,112	71,556	99,065	75,379	75,567	102,511	84,074	97,599	86,055
Wyandot	320,515	413.367	326,353	313,215	331,047	286,275	352,924	368,432	375,920	406,395
Totals	11,762,687	11,681,242	13,512,413	12,992,842	13,017,052	13,104,374	11,877,503	12,262,439	14,671,104	17,161,826

Average for ten years, 13,204,348 pounds.

TABLE SHOWING THE NUMBER OF HORSES IN OHIO FOR TEN YEARS, INCLUDING CITIES AND RURAL DISTRICTS.

Counties.	Number of Horses.									
	1904.	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.
Adams	4.723	4.641	4,809	4,927	4,622	4,503	4,426	4,670	4.927	5,011
Allen	8,945	9.087	8,981	8,638	8,727	8,225	8,397	8,894	9,174	9,193
Ashland	7,768	7.571	7,180	7,020	7,104	6,999	7.009	6,693	7,045	7,784
Ashtabula	9.609	9,906	9,186	9,027	9.038	9.370	9.838	10,424	10,960	11,132
Athens	5,168	4,438	4,375	4,352	4,170	4,543	4,637	4,918	5 063	5,349
Auglaize	8,626	8.541	8,701	8,489	8.178	7,869	8,101	8,618	8.883	9,171
Belmont	8,094	8.508	8,597	8,689	7,551	8,228	8,480	8,755	9,239	10,249
Brown	459	6,420	6,542	6,504	6.714	6,591	6,567	7,214	7.014	7,313
Butler	10,435	10,440	10,447	10,092	10,350	10,472	10,677	10,841	11 349	11,837
Carroll	4,521	4,365	4,197	4,301	4,407	4,390	4.599	4.732	5.189	5,833
Champaign	10,400	10.453	10,429	10,102	10,143	9,969	10,080	10,512	11.301	11.809
Clark	10,915	10.899	10.593	11,171	11,412	11,004	11,371	11,709	11,661	11,392
Clermont	6 431	6.606	6,593	6,867	7,078	6,644	6 676	7,351	7,292	7,667
Clinton	9,459	9.568	9,356	8.890	9,022	8,755	9,002	9,576	9.773	10,480
Columbiana	9.927	10,024	9,489	9,784	9,389	9,384	9,503	9,494	9.567	9.854
Coshocton	5,720	5,968	5.814	5,763	6,013	6,607	6,904	7.018	7,524	7,391
Crawford	8,647	8,713	8,521	8,614	8,391	8.232	8,537	8,374	8.406	8.631
Cuyahoga	17,424	17.598	18.032	21,335	18,158	18,729	18,624	19.443	19.931	18 833
Darke	16,347	16,534	15,617	15,691	15,044	14,552	14,590	14,373	15,061	15,700
Defiance	6,078	6.352	6,261	6,131	5,812	5,941	6,460	6 559	6,671	6,748
Delaware	8,139	7.727	7,700	7,392	6,881	7,310	7,194	7.578	8.400	9,161
Erie	5,424	5,660	5,560	5,674	5,497	4,789	5,385	5.553	5.600	5.994
Fairfield	9,761	9,666	9,591	9,465	9,669	10,019	10,117	9,562	9.807	10.533
Fayette	9,033	9,289	8,979	8.888	9,059	8.782	9,120	9.600	9,763	11.143
Franklin	14,808	14.804	14,165	14,613	14,571	14,504	14,697	15.551	15.862	18.136
Fulton	6.883	7,269	7,362	7,744	6,915	7,112	7,013	6 552	7,376	7.653
Gallia	4.486	4,520	4,690	5,178	4,473	4.892	4,682	4,968	5.315	5.673
Geauga	5,134	5,248	5,262	5,258	5.232	5.345	5,351	5,707	5,821	5,780
Greene	9,659	9.757	9.878	9,504	9,958	9,734	10,229	10,532	10,918	11,510
Guernsey	4,928	5,094	5,463	5.210	5,359	5,427	5,676	6,390	6,079	6,911
Hamilton	16,483	16,498	16,625	17,044	16,847	17,799	18,169	18,782	19,527	20,330

Hancock	10,863	10,468	10,395	10,149	10,225	10,200	10,544	10,612	10,913	11,405
Hardin	8,304	8,130	7,694	7,580	7,793	6,960	7,361	7,646	8,177	8,457
Harrison	4,854	4,988	4,827	5,081	4,741	4,671	4,798	4,943	5,274	5,780
Henry	6,833	7,085	6,987	6,728	5,578	6,678	6,481	6,683	6,891	7,167
Highland	8,166	8,437	8,538	8,379	8,177	8,027	8,284	8,518	9,252	8,298
Hocking	3,583	3,568	3,555	3,637	3,757	3,565	3,404	3,743	4,046	3,980
Holmes	7,292	7,132	6,786	6,594	6,807	6,851	6,491	6,303	6,408	6,972
Huron	7,907	7,855	7,877	7,871	10,056	8,183	8,171	8,278	8,460	8,870
Jackson	3,214	3,441	3,603	3,606	3,590	3,462	3,549	3,609	3,692	3,868
Jefferson	5,580	5,595	5,369	5,430	5,701	5,769	6,097	6,307	6,212	6,813
Knox	7,873	7,735	7,148	6,933	7,693	7,304	7,730	8,059	8,592	9,243
Lake	4,412	4,428	4,205	4,346	4,286	4,830	4,262	4,560	4,614	4,899
Lawrence	3,805	3,767	3,869	3,730	3,647	3,523	3,586	3,668	3,685	4,301
Licking	13,646	12,378	12,188	12,099	12,198	12,138	12,571	12,825	13,915	14,037
Logan	9,276	9,768	9,555	9,187	9,188	8,346	8,695	8,711	9,115	10,085
Lorain	9,132	9,172	9,101	8,938	8,803	9,097	9,099	9,521	8,699	10,268
Lucas	9,504	9,682	9,751	9,773	9,549	9,124	9,329	9,202	8,826	8,906
Madison	9,501	9,644	9,470	9,116	8,973	9,404	9,266	9,671	10,392	10,652
Mahoning	8,876	8,515	8,207	8,144	8,515	8,263	8,493	8,963	9,029	9,532
Marion	7,656	7,683	7,339	7,204	7,169	7,342	7,534	7,543	8,142	8,621
Medina	8,449	8,179	8,038	8,195	8,108	7,721	8,000	8,086	8,326	8,971
Meigs	4,506	4,603	4,792	5,028	5,197	5,304	5,345	5,407	5,679	5,955
Mercer	9,696	9,435	9,217	8,769	8,402	7,939	8,278	8,246	8,295	9,061
Miami	11,328	11,542	11,175	10,634	11,396	10,367	11,450	11,217	11,289	11,999
Monroe	5,036	5,268	5,030	5,464	5,174	4,754	4,965	5,171	5,965	5,777
Montgomery	15,698	16,140	15,117	16,156	16,310	15,759	16,757	15,797	16,143	16,833
Morgan	4,578	4,560	4,867	4,751	4,659	4,754	4,920	5,087	5,571	6,282
Morrow	7,350	7,388	7,270	7,353	7,734	7,262	7,200	7,342	7,561	8,412
Muskingum	9,092	8,903	9,204	8,938	8,967	9,374	9,739	10,075	10,627	11,034
Noble	4,392	4,583	4,602	4,256	4,048	4,183	4,183	4,532	4,626	5,220
Ottawa	5,564	5,395	5,683	5,156	5,413	5,265	5,255	5,333	5,428	5,493
Paulding	6,478	5,923	5,369	5,028	5,176	4,666	4,286	4,826	4,640	4,780
Perry	5,799	5,824	5,681	5,531	5,551	5,487	5,660	5,973	6,301	6,712
Pickaway	9,837	9,302	9,328	9,294	9,561	9,559	9,972	10,283	10,502	10,754
Pike	3,818	3,947	3,903	3,857	4,236	4,265	4,029	4,161	4,317	4,651
Portage	8,622	8,079	8,172	7,914	7,884	7,714	7,961	8,264	8,444	8,930
Preble	9,983	9,937	9,850	9,950	9,874	9,310	9,072	9,498	9,518	9,932
Putnam	8,987	8,953	8,572	8,209	8,151	8,470	8,433	8,566	8,821	9,141
Richland	9,203	8,935	8,909	8,838	8,594	8,698	8,671	8,715	9,030	9,474
Ross	10,236	10,255	9,982	9,990	10,522	10,477	10,934	11,347	12,152	12,730
Sandusky	8,760	8,686	8,376	7,984	8,434	8,430	8,325	8,292	9,182	9,008
Scioto	5,458	5,314	5,375	5,251	5,593	5,476	5,153	5,227	5,312	5,395
Seneca	9,484	9,207	9,202	8,788	9,145	8,971	9,083	9,505	9,386	10,068
Shelby	9,014	9,157	9,034	8,624	8,595	8,526	8,467	8,371	8,610	8,901
Stark	14,501	14,836	14,564	14,429	14,569	13,975	14,218	14,728	15,443	15,575
Summit	8,129	8,985	9,108	9,183	9,073	9,352	9,247	9,444	9,523	9,905
Trumbull	10,229	10,458	10,325	10,039	10,584	10,564	10,659	11,247	11,941	12,003
Tuscarawas	7,350	7,417	7,282	7,272	7,264	7,575	7,872	7,945	8,483	8,950
Union	8,459	8,190	8,023	7,692	7,630	7,277	7,408	7,546	7,704	8,557
Van Wert	8,422	8,184	8,748	8,345	8,250	7,789	8,571	8,370	8,901	8,962
Vinton	2,295	2,347	2,407	2,375	2,504	2,578	2,632	2,659	2,814	2,948

TABLE SHOWING THE NUMBER OF HORSES IN OHIO FOR TEN YEARS, INCLUDING CITIES AND RURAL DISTRICTS—Concluded.

Counties.	Number of Horses.									
	1904.	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.
Warren	9.439	9.650	9.238	9.274	9,143	9,222	9,209	9,464	9,742	10,285
Washington	7.120	7,107	7,389	7.605	7,692	7,476	7,839	7,749	8,110	8.135
Wayne	12.267	11,911	11.500	11,068	10,821	10.888	11,115	11,165	11,217	11,685
Williams	6,931	6,579	6,489	6.165	6.256	6,377	6,277	6,192	6,672	7,346
Wood	11,278	10,808	11,744	10.874	11,256	10.933	11,731	11,640	11,159	11,107
Wyandot	7,705	7,407	7,534	7,339	7,150	6,971	6,962	7,227	7,216	7,641
Totals	726,204	725,024	716,558	712,500	711,146	704,165	717,734	735,050	759,482	795,967

TABLE SHOWING THE NUMBER OF CATTLE IN OHIO FOR TEN YEARS, INCLUDING CITIES AND RURAL DISTRICTS.

Counties.	Number of Cattle.									
	1904.	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.
Adams	10,467	10,615	10,432	10.603	10,384	9,716	9,114	7,852	8 354	8.575
Allen	15,690	17,614	15,799	14,861	15,177	13,640	13,224	12,345	12,151	12,779
Ashland	15,758	15,349	14,650	14,825	14,726	14,843	13.392	11,942	12,317	13,124
Ashtabula	32,186	32,201	28,882	30,024	28.448	27,478	26,726	23,961	23,855	24.386
Athens	10,069	10,370	11,070	10,320	11,217	12,099	11,218	9,761	9.175	10,836
Auglaize	16,972	17,168	16,232	15,901	15,224	14,587	13,224	12.692	13,265	14,705
Belmont	17,221	18,208	19,550	20,749	21,850	20,331	19,127	17,429	17,055	19,871
Brown	12,804	12,897	12,979	13,407	13,112	12,306	10,784	10,843	10,617	10,679
Butler	16,820	17.011	16,622	16,045	15.691	14,668	13,711	13,096	12.842	14,030
Carroll	12,939	13,654	12,941	18,009	13.248	12,785	11,814	10,961	11,067	12.226
Champaign	18,297	20,258	20,020	18.695	17,928	17,168	14,958	14,058	13.955	15.714
Clark	28,474	19,469	18,281	19,920	18.453	17,866	15,789	14,758	14,729	14,493
Clermont	9,987	10,435	10,657	9,761	10,567	9,500	9,081	8,950	9,624	10,310
Clinton	15,957	17,250	16,390	17,067	15,540	14,093	13,386	12,010	12,538	12,906
Columbiana	21,727	21,839	20,501	22,507	22,072	20,005	19,456	18,243	17,705	18.234
Coshocton	16,796	18,306	17,531	16,008	16.728	17,659	15,823	13,952	14.376	14.519
Crawford	16,164	17,080	16,532	16,933	17,348	16.018	15,229	14,370	14,353	14.592
Cuyahoga	15,977	16,615	16,247	16,322	16,631	16,142	15,768	15,642	15.293	15,571
Darke	25,269	26,928	25,889	24.319	23,039	22,213	20,591	19,041	19,694	20,837
Defiance	10,358	10,519	11,816	11,284	9,957	9,958	9,485	9,299	9,782	8,481
Delaware	20.074	21,196	19,133	17,362	16,669	15,929	15,766	13,710	13,283	14,429
Erie	7,762	8,418	7,911	7,902	7.873	6,934	7,223	7,057	6.800	6,980
Fairfield	21.140	22,346	21,930	20,766	21,365	19,474	17,210	16.400	16,793	19,073
Fayette	18,739	20,070	19,819	19,719	20.007	17,049	16.931	15,298	13.502	16,143
Franklin	20,763	21,037	20,767	19.672	18,662	18,427	17,587	17,459	16.972	19,846
Fulton	17,524	18,030	17,657	17,675	14.335	14,085	12,603	11,029	12.548	12,855
Gallia	10,366	11,491	11,741	13,179	11,956	11,900	10,328	8,812	9,237	10.324
Geauga	21,471	21,725	21,570	21,599	20.263	20,291	18,898	17,103	16.067	17.243
Greene	17,656	18,956	18,678	17,622	17,126	15,341	14,804	13,926	14.508	15,027
Guernsey	13.161	13,639	13,985	13,948	15,351	14,532	13,737	12,938	11.919	14,553
Hamilton	17,739	17,907	17,700	18,796	17,483	17,774	17,665	18,421	18,595	19,883

TABLE SHOWING THE NUMBER OF CATTLE IN OHIO FOR TEN YEARS, INCLUDING CITIES AND RURAL DISTRICTS—Concluded.

Counties.	Number of Cattle.									
	1904.	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.
Hancock	25,100	24,472	23,179	22,154	22,223	20,698	19,716	18,429	18,689	19,086
Hardin	19,233	19,480	18,428	17,213	17,251	14,927	13,793	12,629	12,067	12,352
Harrison	10,568	11,415	11,222	12,204	12,035	11,934	11,497	10,642	9,944	11,335
Henry	14,294	15,427	14,675	14,173	12,895	12,111	11,191	11,388	11,380	17,712
Highland	20,046	20,462	20,189	19,921	18,774	16,577	15,639	14,401	14,514	16,282
Hocking	9,324	9,414	9,772	9,917	9,711	8,778	7,878	7,757	8,192	8,821
Holmes	19,271	17,978	17,862	17,108	18,241	17,486	15,455	13,234	13,980	16,767
Huron	15,138	15,685	15,214	14,326	14,779	14,224	13,026	12,063	12,435	12,648
Jackson	9,724	10,349	11,051	11,939	11,273	10,745	9,282	8,672	8,871	9,603
Jefferson	11,444	11,962	12,035	13,597	12,773	10,692	11,450	10,479	9,815	11,133
Knox	18,449	20,317	17,625	16,362	18,807	17,136	15,862	14,648	14,363	16,303
Lake	7,680	7,727	7,588	7,572	7,189	6,969	6,444	6,015	6,026	6,006
Lawrence	8,734	9,607	9,418	9,839	9,320	8,377	7,642	7,120	6,544	7,665
Licking	29,828	30,307	28,430	26,757	26,760	25,370	22,868	21,233	22,356	23,948
Logan	18,437	20,257	19,772	19,144	18,828	17,020	15,205	12,781	13,324	14,711
Lorain	22,170	23,903	23,163	23,410	22,139	21,185	20,138	20,262	19,107	10,182
Lucas	10,268	10,140	10,039	9,744	9,317	8,588	8,189	7,819	7,813	7,665
Madison	19,876	24,032	24,111	21,223	19,470	17,498	24,308	16,448	15,490	18,918
Mahoning	19,736	19,589	18,925	17,578	18,384	16,700	15,942	14,858	14,501	15,301
Marion	15,681	17,333	16,693	14,781	15,185	15,232	13,264	12,243	11,779	12,152
Medina	17,891	18,134	17,011	18,043	17,394	15,320	15,631	14,871	15,240	15,749
Meigs	9,688	10,010	10,696	11,277	10,748	10,778	10,280	9,159	8,912	10,893
Mercer	18,763	18,125	17,449	16,586	15,713	15,285	14,343	13,455	14,025	14,812
Miami	15,928	16,064	15,370	14,305	14,523	13,690	12,961	12,120	12,455	13,405
Monroe	11,555	12,203	12,570	14,040	12,460	13,115	11,866	10,440	9,786	12,843
Montgomery	19,738	20,915	21,289	20,540	19,791	19,444	18,376	16,048	17,048	18,618
Morgan	11,918	13,043	13,572	13,632	13,308	13,098	12,371	11,813	11,128	12,878
Morrow	15,294	15,837	15,017	14,106	15,035	14,847	13,285	11,782	11,562	12,434
Muskingum	23,915	24,525	25,389	24,663	24,316	24,002	22,494	22,069	21,363	23,786
Noble	13,864	14,581	14,834	13,904	14,312	14,206	12,613	11,436	10,400	12,774
Ottawa	8,960	9,040	9,155	9,008	8,792	7,968	7,491	7,396	7,634	7,669
Paulding	8,342	8,369	8,134	7,711	6,459	5,727	4,901	5,016	5,345	4,956
Perry	13,776	13,791	15,582	15,601	15,318	14,053	13,039	11,870	12,399	13,987

Pickaway	20,086	22,990	22,087	21,967	20,121	18,678	18,244	17,210	17,737	20,017
Pike	6,418	6,782	6,394	6,197	6,143	5,623	4,849	4,595	5,131	5,499
Portage	22,665	22,266	22,656	21,076	21,311	20,181	19,532	18,076	17,033	19,651
Preble	18,367	18,824	17,719	17,440	16,086	15,281	11,072	13,199	13,330	12,805
Putnam	19.328	19,704	18,788	17,194	16,822	16,118	14.354	13,267	13,531	13,221
Richland	18,906	18,817	17,985	17,281	17,095	16,063	15,039	13,291	13,903	14,863
Ross	20.744	22,299	22,662	21,793	21,124	19,197	17,482	16,918	16,916	18,972
Sandusky	14,966	15,800	15,396	13,491	14,289	13,362	12,977	11,205	12,386	12,807
Scioto	8,854	9,200	8,925	8,406	8,815	8,858	7,624	7,678	7,995	8,227
Seneca	19,423	19,292	17,063	16,203	17,133	15,206	14,215	15,100	15,483	16,052
Shelby	16,447	16,096	16,147	15,099	16,091	14,730	13.334	13.195	14,159	14,018
Stark	26.212	26,580	27,542	28,702	28,652	26,352	25.383	24,048	24,692	24,989
Summit	20,067	20,585	20,154	20,929	21,465	20,250	19,287	17,644	16.848	17,426
Trumbull	29,922	30,676	31,628	32,511	32,350	31,500	29,374	26,897	26,089	26,594
Tuscarawas	20.230	20,720	21,091	20.826	21,139	20,409	19,579	18,796	19,277	20,344
Union	16.544	17,738	17,596	14,834	15,222	14,014	12,540	11,182	11,069	12,953
Van Wert	12,761	13,127	13,672	12,648	12,198	11,278	10,684	9,413	10,522	10.919
Vinton	5.988	6,031	6,407	6,685	6,646	6,685	5,766	5,350	5,475	6,242
Warren	15,261	18,072	16,851	17,373	15,524	13,425	12,194	11,569	11,537	12,129
Washington	14,629	15,333	16,934	17,413	17,771	17,236	15.884	13,772	13,798	15,509
Wayne	25,348	25.500	25,210	25,480	25,352	24,960	22,730	20,615	20,720	21,435
Williams	14,923	14,454	14,136	13,530	12.244	12,461	11,259	10,122	11,009	11,020
Wood	20,869	20,948	20,874	20,044	17.909	17,498	14.730	15,807	14,974	15,788
Wyandot	14,406	14,826	14,348	13,091	14,200	13,304	11,440	11,191	10,403	10,757
Totals	1,464,324	1,509,754	1,481,586	1,458,391	1,427,661	1,351,251	1,265,664	1,174,094	1,175,475	1,252,888

TABLE SHOWING THE NUMBER OF MULES IN OHIO FOR TEN YEARS.

Counties.	Number of Mules.									
	1904.	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.
Adams	234	218	223	193	190	181	189	189	228	218
Allen	99	92	85	94	102	112	98	103	98	139
Ashland	85	83	79	78	66	55	54	56	58	78
Ashtabula	26	20	25	40	35	42	41	42	43	53
Athens	123	113	95	141	119	133	170	165	177	190
Auglaize	102	113	111	118	114	133	148	171	175	207
Belmont	502	428	368	440	374	313	370	375	386	382
Brown	322	274	229	201	199	209	213	210	238	291
Butler	508	521	433	404	472	450	453	482	537	649
Carroll	74	81	67	59	63	72	62	73	75	96
Champaign	295	222	219	151	169	148	143	153	164	175
Clark	392	375	276	232	201	190	299	211	213	207
Clermont	491	566	534	520	489	546	569	604	645	679
Clinton	456	380	344	288	296	310	322	328	354	362
Columbiana	142	103	73	71	62	66	85	77	87	128
Coshocton	162	166	139	128	159	159	111	103	110	110
Crawford	141	128	113	97	69	68	79	67	86	91
Cuyahoga	62	59	63	42	49	57	114	85	129	104
Darke	384	317	327	285	287	280	317	344	403	409
Defiance	49	58	70	71	59	59	75	82	87	96
Delaware	132	96	90	260	57	57	55	55	63	60
Erie	16	14	9	13	15	7	22	17	26	21
Fairfield	148	170	138	119	130	124	134	129	120	143
Fayette	310	269	267	197	174	166	152	179	198	260
Franklin	160	160	103	131	113	101	131	121	131	147
Fulton	22	30	30	33	27	30	24	18	30	40
Gallia	166	178	136	145	207	207	234	264	246	281
Geauga	26	24	35	29	26	30	32	39	55	48
Greene	281	263	230	188	183	172	173	191	191	240
Guernsey	340	277	234	201	190	237	219	240	191	183
Hamilton	935	1,017	1,014	1,242	1,112	1,107	1,271	1,359	1,448	1,572
Hancock	50	63	61	71	83	80	99	94	105	121
Hardin	106	95	72	77	88	83	101	129	155	161

Harrison	121	57	54	75	66	83	53	61	87	85
Henry	82	78	77	77	79	89	73	86	96	103
Highland	300	105	69	54	64	60	54	49	42	43
Hocking	64	56	56	61	66	53	67	72	77	101
Holmes	54	375	190	225	219	214	207	235	265	291
Huron	74	78	60	62	49	58	95	92	87	84
Jackson	764	768	762	855	836	820	830	795	808	784
Jefferson	361	364	237	163	186	255	195	188	180	·196
Knox	140	126	124	109	114	116	115	110	111	117
Lake	4	13	8	14	5	9	13	15	26	30
Lawrence	510	491	537	519	546	491	494	515	545	635
Licking	169	143	147	112	101	112	100	116	126	115
Logan	121	103	89	79	81	74	84	71	72	103
Lorain	40	36	33	30	50	38	76	41	33	47
Lucas	38	64	73	51	98	116	137	144	118	125
Madison	284	302	210	191	225	240	254	234	239	268
Mahoning	97	97	81	78	77	84	104	75	86	98
Marion	175	169	167	137	186	123	114	131	124	143
Medina	109	155	107	116	107	93	125	116	137	236
Meigs	233	214	200	188	210	218	222	258	289	284
Mercer	152	128	126	125	120	119	132	122	143	162
Miami	370	289	276	211	233	249	234	242	240	280
Monroe	59	69	68	66	59	48	88	77	62	73
Montgomery	280	276	243	227	246	215	227	240	255	265
Morgan	39	26	38	38	41	45	52	49	52	53
Morrow	66	71	45	42	42	53	62	54	50	57
Muskingum	183	182	161	163	153	167	171	162	201	222
Noble	34	34	44	40	52	60	57	45	44	52
Ottawa	48	50	47	33	39	40	14	10	20	27
Paulding	84	65	64	59	48	29	41	42	50	54
Perry	136	122	150	110	106	95	100	116	115	124
Pickaway	335	347	304	301	281	311	280	273	287	301
Pike	205	177	172	169	190	195	203	207	253	246
Portage	111	77	101	86	70	98	91	97	93	70
Preble	353	346	413	339	320	271	255	237	240	228
Putnam	63	54	61	59	55	64	50	78	74	94
Richland	140	150	133	137	114	121	142	147	151	177
Ross	181	156	158	153	132	156	149	203	182	236
Sandusky	44	38	47	47	50	43	53	60	78	80
Scioto	519	528	571	571	603	641	631	774	787	842
Seneca	130	74	91	58	69	61	63	89	90	104
Shelby	109	115	119	80	87	81	89	98	110	124
Stark	315	369	361	329	351	331	327	310	356	372
Summit	116	95	208	99	97	105	88	94	72	90
Trumbull	77	82	58	92	94	159	98	57	65	68
Tuscarawas	225	229	219	144	118	159	113	130	125	130
Union	104	95	75	45	45	30	36	31	49	62
Van Wert	202	191	221	186	168	156	152	141	178	167
Vinton	125	112	106	101	97	101	106	117	146	144
Warren	442	388	381	378	397	403	389	383	407	475
Washington	150	143	158	177	191	178	171	164	183	192
Wayne	281	227	180	152	167	181	182	182	171	155

TABLE SHOWING THE NUMBER OF MULES IN OHIO FOR TEN YEARS—Concluded.

Counties.	Number of Mules.									
	1904.	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.
Williams	58	42	30	31	40	57	57	65	68	83
Wood	78	64	71	66	94	80	101	130	130	241
Wyandot	131	105	124	61	60	76	55	51	71	63
Totals	16,990	16,283	15,197	14,530	14,373	14,508	15,030	15,445	16,398	17,942

TABLE SHOWING NUMBER OF SHEEP IN OHIO FOR TEN YEARS.

Counties.	Number of Sheep.									
	1904.	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.
Adams	5,404	5,890	7,598	8,857	9,068	8,784	7,997	7,421	8,533	11,420
Allen	16,380	17,487	19,205	20,732	20,707	19,193	17,705	14,365	16,676	22,681
Ashland	33,382	34,314	36,243	37,308	36,876	36,114	32,885	27,790	28,266	36,075
Ashtabula	8,829	10,972	12,693	14,735	16,575	19,188	18,374	17,797	20,201	25,228
Athens	41,739	42,075	46,063	47,649	46,086	43,879	40,478	33,264	34,310	40,861
Auglaize	7,163	8,614	10,128	11,551	12,011	11,811	9,568	8,580	10,907	13,743
Belmont	63,307	65,923	72,968	84,037	84,760	76,542	72,991	60,908	62,292	89,370
Brown	6,752	7,139	9.579	12,327	12,814	12,315	12,225	9,579	9,611	11,910
Butler	6,712	7,232	7.586	9,471	9,980	10,687	7,482	5,745	7,721	10,252
Carroll	51,575	50,675	52,082	57,992	59,301	62,660	60,888	53,090	58,566	78,584
Champaign	15,993	17,391	21,929	29,264	23,475	22,419	23,873	23,322	21,431	31,666
Clark	20,522	20,003	22,440	29,095	23,829	28,602	27,449	26,699	27,624	28,653
Clermont	3,654	4,375	6,742	8,067	7,713	7,383	6,647	5,629	7,208	8,193
Clinton	15,217	16,996	22,404	25,313	25,787	24,605	25,474	19,615	23,751	28,848
Columbiana	24,750	26,758	30,127	35,700	36,361	36,622	36,705	30,962	33,974	43,214
Coshocton	74,759	72,661	74,752	75,909	77,362	81,371	78,952	71,824	75,820	94,376
Crawford	42,133	40,976	42.153	45,952	45,257	34,768	42.534	36,786	41,043	53,811
Cuyahoga	4,711	5,496	6,344	6,838	7,119	7,022	6,757	6,055	6,348	7,976
Darke	4,549	6,144	7,338	7,717	7,754	6,753	6,870	5,219	5,793	8,350
Defiance	13,889	14,724	15,996	15,973	14,494	14,071	13,056	10,926	12,063	14,064
Delaware	37,711	38,526	45,189	46,228	44,578	44,202	42,646	39,259	41,644	53,635
Erie	9,908	10,691	11,942	12,909	12,934	10,943	12,575	11,343	12,890	16,085
Fairfield	12,055	13,780	15,456	16,673	18,443	16,925	16,736	12,714	13,993	21,589
Fayette	7,720	9,710	11,333	13,296	13,555	14,537	13,117	11,285	13,498	20,952
Franklin	9,624	10,507	11,422	12,558	12,761	11,953	11,042	10,221	10,838	15,771
Fulton	15,455	16,952	19,898	23,345	21,126	21,644	20,278	19,490	20,473	24,754
Gallia	9,092	9,141	11,210	13,517	13,930	15,425	14,788	13,710	13,946	20,024
Geauga	5,553	7,013	9,577	10,936	12,056	14,287	14,956	14,508	14,709	18,257
Greene	15,511	15,642	18,548	20,321	18,665	18,188	16,860	14,547	18,342	22,953
Guernsey	60,549	61,659	67,245	72,855	74,621	74,087	69,769	60,533	63,368	88,459
Hamilton	1,701	1,992	2,518	2,673	2,139	2,590	2,188	2,033	2,620	3,289
Hancock	36,130	36,428	38,265	38,764	36,400	35,355	33,086	30,595	33,887	41,912
Hardin	31,144	31,798	33,553	34,503	36,006	33,192	32,848	27,339	30,873	43,532

TABLE SHOWING NUMBER OF SHEEP IN OHIO FOR TEN YEARS—Concluded.

Counties.	Number of Sheep.									
	1904.	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.
Harrison	91,171	94,425	96,304	103.812	104.134	103.803	100.162	89,339	92,134	121,599
Henry	6,926	7,748	8,156	9,080	8.722	8.628	8,787	7,438	8,318	10,914
Highland	13,327	14.690	19.975	25,466	25.591	23.817	21,075	17.770	18.693	23.300
Hocking	14,121	13.911	16,243	17.198	17,293	16.215	15,673	14,018	17,769	23.392
Holmes	23,733	23,705	25,190	29.802	31.245	30,336	27.926	23.737	25,198	34.027
Huron	48,254	47.172	52,417	57,582	53,312	53,931	53.508	46.985	46,321	54.170
Jackson	4,501	5.650	7,738	8.304	8,889	8.617	8.955	9,031	11,827	14,769
Jefferson	42,774	45.023	49,160	55.219	60,433	56.998	56.636	49,064	46,273	65,203
Knox	96,505	95,822	91.063	90.537	95,698	90.645	84.764	73.681	76,411	103,200
Lake	3,792	4,460	5,750	6.087	6.456	7,431	7,377	6.795	7,914	9,690
Lawrence	1,499	1,711	2.590	3,456	2.350	3,109	3,128	3,257	3,619	5.031
Licking	89,546	90,760	96,295	99,427	94.483	93,434	92,214	81.652	92,243	115,620
Logan	26,623	29,343	31,790	35,363	36.862	34,405	31,371	30,074	34,237	44,530
Lorain	16,272	18,774	22,914	25,437	26,753	27,280	24,447	21,677	25,019	30.668
Lucas	1,873	1,993	2,699	3,026	3,339	3,259	3,191	2,740	2,736	4.044
Madison	15,131	15,842	21,985	24,963	26,540	27,555	28,991	29,586	31,854	47.704
Mahoning	17,168	18,557	21,674	21,346	24,992	29,506	29,815	25,143	26.877	37,678
Marion	46,277	48.701	49.401	66.661	57,811	59.518	54,174	44.750	50.035	56,109
Medina	21.705	23,098	26,629	30.381	31.042	32.743	32,415	30,119	32,606	40,894
Meigs	24,350	22,593	26,627	29,923	30,263	30,244	28.357	25,956	27,775	38.698
Mercer	9,032	10,193	12,746	14,933	14,827	13,977	11,980	9,419	9.089	12,222
Miami	2,647	3.347	4,085	3.872	4,516	4,871	4,902	5,235	4,470	6,253
Monroe	9,109	9,326	13,420	16,397	17,735	17,826	16,441	12,536	14,230	25,833
Montgomery	2,069	2,500	3,096	3,097	3,216	3,058	3,128	2,685	3,535	5,194
Morgan	55,758	54,973	62,039	69,100	68,079	65,214	59,079	51,736	54,892	72,090
Morrow	61,644	72,400	62.114	66,165	66,318	63.701	60,362	53,120	54,854	72,902
Muskingum	81,016	82.556	85.691	92,223	89,319	88,069	83,589	75,336	82,945	105,392
Noble	45,358	48,434	56,170	57.012	56,668	53,167	45,822	41,233	40,047	61,070
Ottawa	4,787	4,918	5,174	5,370	4,991	5,265	5,148	4,822	6,014	7,977
Paulding	6,938	8.095	8.912	9,676	8.626	6,929	6,034	4,559	5,242	6,726
Perry	26,038	28.265	29,497	32,360	29,087	27,497	25,817	24,339	27,715	37,022
Pickaway	6,027	6,886	8,899	11,223	10,625	9,994	9,471	8,777	9,969	13,615

Pike	3,704	4,089	4,525	4,150	4,602	4,991	3,890	3,896	5,909	7,989
Portage	15,343	16,982	20,883	23,790	25,446	25,406	26,989	23,607	25,332	33,562
Preble	5,031	5,290	6,081	6,567	7,599	7,702	7,190	5,741	7,144	9,042
Putnam	9,851	10,979	12,670	13,316	13,403	12,452	10,384	8,759	10,230	13,133
Richland	37,747	39,248	39,780	42,859	41,787	42,352	39,912	32,842	34,266	47,051
Ross	7,890	9,004	10,205	12,196	11,785	12,254	12,277	11,220	11,387	17,885
Sandusky	14,585	15,195	17,107	15,923	16,079	17,294	19,095	14,014	16,783	20,375
Scioto	1,767	1,809	2,067	2,059	1,964	1,762	1,814	1,727	2,341	2,973
Seneca	35,427	35,498	37,416	35,708	36,001	33,581	32,726	30,827	32,004	39,655
Shelby	4,300	7,848	7,545	7,177	8,295	8,385	7,287	6,172	6,814	8,414
Stark	15,283	16,565	19,971	22,386	24,829	25,680	26,230	23,453	26,215	33,802
Summit	5,416	6,722	7,560	9,140	9,312	9,526	9,986	8,871	9,935	13,442
Trumbull	13,367	16,540	21,993	25,130	27,658	29,016	29,893	26,922	30,041	40,339
Tuscarawas	26,686	27,644	29,198	32,772	33,977	33,801	32,639	28,681	32,731	45,206
Union	29,830	32,485	38,553	43,180	44,732	42,011	43,616	36,150	37,395	53,698
Van Wert	10,394	11,674	13,833	15,236	14,962	14,083	13,338	9,273	10,595	13,045
Vinton	16,075	17,615	19,713	19,625	19,658	18,380	19,097	18,152	22,420	27,799
Warren	6,136	5,860	9,051	11,239	12,336	12,965	11,965	11,577	14,408	16,288
Washington	26,282	27,433	32,679	37,390	40,064	40,706	37,824	32,961	38,472	52,576
Wayne	17,421	19,521	22,210	25,570	24,770	26,481	25,571	21,573	22,823	29,808
Williams	25,722	25,877	29,046	28,056	25,539	28,043	24,466	21,521	22,376	26,689
Wood	14,681	14,642	18,528	19,500	16,657	17,745	17,586	19,478	20,374	24,816
Wyandot	60,090	62,773	60,595	65,940	66,852	59,986	56,245	56,475	59,462	68,026
Totals	2,033,072	2,127,451	2,331,078	2,546,772	2,544,070	2,512,761	2,404,558	2,123,624	2,293,686	3,004,636

TABLE SHOWING THE NUMBER OF HOGS IN OHIO FOR TEN YEARS.

Counties.	Number of Hogs.									
	1904.	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.
Adams	8,899	10,478	8,269	8,621	10,346	12,243	14,202	10,908	11,600	10,591
Allen	21,911	23,354	26,238	24,351	23,449	23,517	26,638	20,352	25,017	21,937
Ashland	19,392	20,808	17,925	26,717	15,535	17,814	20,348	16,419	14,881	13,924
Ashtabula	5,247	5,465	4,915	4,031	3,661	4,684	5,072	5,547	5,993	5,475
Athens	2,945	2,954	2,855	2,978	3,444	3,837	4,900	4,715	4,360	4,525
Auglaize	22,179	22,407	25,091	25,759	25,531	25,107	28,210	22,982	22,524	22,433
Belmont	9,105	9,758	9,735	9,441	10,805	11,644	14,551	12,270	10,375	12,560
Brown	20,849	20,069	18,436	19,960	21,708	25,166	28,527	22,370	21,867	19,063
Butler	24,376	21,780	24,417	22,381	20,758	21,164	25,868	19,288	18,642	19,947
Carroll	8,509	9,102	8,727	7,680	8,276	9,805	10,142	10,139	8,316	9,423
Champaign	35,287	34,498	33,409	31,758	29,921	27,768	34,408	25,025	22,837	25,723
Clark	25,400	25,059	24,056	22,888	26,571	26,786	29,464	22,947	21,225	23,733
Clermont	13,798	14,549	15,012	15,667	16,014	17,946	20,921	16,521	14,597	13,094
Clinton	36,826	37,210	38,230	40,795	38,493	33,538	37,957	32,183	29,279	25,734
Columbiana	12,596	11,927	11,359	10,642	11,376	11,511	12,920	11,433	11,175	11,711
Coshocton	12,535	15,736	14,056	11,338	13,022	15,525	17,151	15,686	13,897	14,580
Crawford	24,216	30,261	32,416	29,198	28,801	27,651	34,786	32,509	27,992	25,244
Cuyahoga	2,610	2,794	2,526	1,903	2,047	2,176	2,627	2,662	3,160	2,728
Darke	40,934	39,670	38,755	35,686	34,228	33,879	42,210	34,423	33,085	31,446
Defiance	15,243	15,360	14,933	14,494	13,747	13,309	16,233	11,411	14,229	12,109
Delaware	23,375	24,420	24,887	22,944	21,726	23,346	26,111	21,128	18,517	20,199
Erie	7,209	7,235	7,410	6,474	6,080	4,021	8,205	8,023	8,471	7,498
Fairfield	32,465	31,158	31,248	33,755	37,733	38,008	41,284	30,043	26,493	28,287
Fayette	32,777	29,967	33,234	37,185	36,132	32,067	41,369	31,705	32,360	27,504
Franklin	23,624	22,138	22,735	22,747	27,162	28,276	29,743	22,639	22,814	26,376
Fulton	22,956	21,298	22,133	19,773	16,711	17,321	21,821	17,300	19,793	18,250
Gallia	5,314	5,454	5,512	6,803	6,540	7,387	9,020	7,480	7,678	7,548
Geauga	4,183	4,368	4,433	3,532	3,326	4,404	4,731	4,076	4,322	3,763
Greene	30,661	30,099	27,736	25,211	25,768	29,709	32,456	21,569	22,009	25,650
Guernsey	5,647	6,826	6,138	5,686	6,497	7,038	9,630	9,100	7,976	9,083
Hamilton	9,431	9,865	10,307	10,521	11,060	12,039	11,884	10,800	10,278	11,398

Hancock	36,663	33,075	33,971	31,449	34,126	37,999	43,340	30,747	31,991	34,148
Hardin	32,062	31,859	31,932	28,904	29,292	25,070	31,491	24,798	22,737	28,395
Harrison	5,404	6,209	5,959	5,010	5,307	6,150	7,741	7,148	6,180	6,778
Henry	18,743	18,494	17,962	17,871	19,022	18,298	17,240	16,778	15,928	18,015
Highland	32,627	32,731	34,104	34,570	33,435	33,687	27,277	29,757	31,145	28,711
Hocking	5,309	5,643	5,260	6,265	5,942	5,967	6,937	6,169	6,647	6,114
Holmes	18,154	22,529	20,669	18,905	18,486	20,049	22,716	20,343	16,146	18,294
Huron	14,252	15,649	14,677	10,913	11,196	13,051	15,701	13,629	12,358	12.015
Jackson	3,446	3,557	3,456	3,743	3,921	4,542	5,411	4,600	4,613	4,446
Jefferson	5,811	6,093	5,625	5,120	6,762	6,836	8,488	8.062	6,694	7,364
Knox	21,090	24,363	20,511	17,249	18,794	21,351	25,911	23,111	18,344	19,121
Lake	2,057	2,031	1,580	1,453	1,295	1,606	1,840	1,774	1,955	1,612
Lawrence	4,078	4,505	3,471	4,035	4,549	4,947	5,478	4,791	4.651	5,116
Licking	28,555	30,896	29,162	27,622	31,544	34,194	38,247	30.425	26,560	29,054
Logan	29,309	30,840	29,538	27,753	26,993	26,795	31,345	23,835	20,246	21,919
Lorain	8,412	9,433	8,401	7,123	6,434	7,799	8,955	7,893	8,128	8.372
Lucas	9,023	9,097	8,176	7,799	7,020	7,369	9,169	7,688	6.054	7,646
Madison	33,243	36,882	35,342	37.220	34,730	34,543	39,594	32.549	26,147	30.443
Mahoning	7,457	8,305	7,685	6.963	7,423	7,747	9,087	8,373	7,507	8.227
Marion	29,900	30,518	39,278	23,999	24,114	21,406	26,489	23,395	21,786	25,192
Medina	11,075	11,072	10,943	9,156	7,994	9,667	11,101	9,479	8,932	9,278
Meigs	3,272	3,180	3,211	3,433	4,094	4,733	5,882	5,205	4,795	5,584
Mercer	27,180	26,858	27,107	25,618	22,584	27,533	31,420	26,462	27,212	28.391
Miami	20,090	18,233	17,891	14,785	16,737	19,122	21,269	14,318	15,631	15,487
Monroe	5,202	5,927	4,779	5,369	5,964	5,469	7,119	6.605	5,344	6,480
Montgomery	23,584	22,406	22,094	19,609	20,740	21,663	23,871	17.230	20,618	20,873
Morgan	4,936	5,031	4,667	4,550	4,552	5.272	7,440	6,525	5,874	7.379
Morrow	15,843	16,282	14,772	14,031	14,156	16,239	18,806	16.357	13,457	12,942
Muskingum	11,142	12,277	11,442	11,041	11,578	13,518	16,037	14.817	13,390	14,379
Noble	6,072	7,459	6,711	5,810	6,733	7,743	10,191	8,684	7,417	8,047
Ottawa	8,089	8,070	8,444	6,958	7,499	9,885	10,917	10,492	9,335	9,759
Paulding	8,331	11,643	11,382	11,149	11,324	8,802	10,049	8,009	10,488	8,896
Perry	9,117	9,589	9,037	8,748	9,201	10,692	12,267	10.243	9,269	10.002
Pickaway	24,644	26,068	26,627	28,331	30,706	29,475	30,628	20,297	27,742	30.124
Pike	6.573	7,165	6,287	5.771	6,795	7,417	8.877	6,680	6,828	7,767
Portage	8,085	7,553	7,301	6,016	6,123	7,614	8,675	7,409	7,321	7,809
Preble	33,080	29,481	30,655	30,295	27,858	31,056	33,693	21.983	23,880	25,837
Putnam	30,199	28,801	38,567	37,319	35,974	34,399	35.755	31,582	33,347	33.019
Richland	23,617	25,275	23,770	20,916	19,451	21,348	25,656	21.619	20,097	19,459
Ross	25,372	25,215	24,744	24.698	26,006	24.136	36,408	21.579	24,892	27,029
Sandusky	19,872	15,188	16,178	11,820	20,339	23,541	23,559	22,255	22,233	22,245
Scioto	7,377	7,512	6,041	5,805	7,420	8,347	7,677	6,992	8,289	7,400
Seneca	29,925	28,913	28,034	22,680	27,644	34,403	40,672	34,654	33,435	31,313
Shelby	19,803	16,412	19,769	18,055	18,815	20,432	26,208	20,320	18,974	19,184
Stark	21,938	22,993	23,199	21,328	21,685	22,508	26,341	24,276	22,611	22.489
Summit	9,300	9,690	9,391	8,213	7,786	9,294	11,056	9,689	9,028	9.281
Trumbull	6,795	6,276	6,245	6,008	5,519	6,579	6,953	6.593	7,800	6,968
Tuscarawas	11,612	13,083	13,070	11,812	12,450	13,477	17,004	15.729	14,859	14,183
Union	32,119	34,069	33,642	29,275	29,010	25,952	28,953	21,977	21,239	22,949
Van Wert	24,236	23,198	23,021	24,339	25,051	22,973	24,963	16,393	22,469	24.872
Vinton	2,109	2,214	2,111	2,097	2,248	3,393	3,324	3,324	3,254	2,930

TABLE SHOWING THE NUMBER OF HOGS IN OHIO FOR TEN YEARS—Concluded.

Counties.	Number of Hogs.									
	1904.	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.
Warren	20,226	20.433	27.501	21.948	22,537	23,562	28,459	18.649	16,526	20,165
Washington	6,623	6,221	6,073	6,382	6,870	7.608	9.808	7,838	7,739	8.767
Wayne	27.830	27,953	26.695	25,329	24,135	27,255	31.690	27,454	22,709	22.814
Williams	23,758	22.834	23,281	20.689	19.455	16.949	19,888	17,891	19,130	17,194
Wood	32,096	31,178	30,621	29,371	32.500	34,026	37,612	29.694	26,397	25,162
Wyandot	29,062	29,148	27,240	23,692	23,132	25,378	27,400	26,155	23,678	23,930
Totals	1,536,308	1,553,676	1,556,435	1,467,331	1,489,518	1,549,552	1,794,014	1,455,247	1,407,758	1,437,450

ABSTRACTS FROM REPORTS OF COUNTY AGRICULTURAL SOCIETIES FOR 1904

TABLE I—COUNTY FAIRS IN OHIO FOR 1904.

County.	President.	Postoffice.	Treasurer.	Postoffice.
Adams	W. S. Kincaid	West Union	H. W. Dickinson	West Union.
Allen	J. A. States	Beaver Dam, R. F. D.	George R. Fetter	Lima.
Ashtabula	G. S. Harvey	Rock Creek	Charles Lawyer	Jefferson.
Athens	A. Murphy	Athens	E. R. Walker	Athens.
Auglaize	Charles Frazer	Uniopolis	T. E. Bowsher	Buckland.
Belmont	D. S. Creamer	St. Clairsville	W. T. Judkins	St. Clairsville.
Brown	V. K. Thompson	Georgetown	B. M. Marshall	Georgetown.
Butler	J. A. Slade	Hamilton	W. B. Wallace	Oxford.
Carroll	T. H. Watson	Minerva	T. J. Saltsman	Carrollton.
Champaign	C. H. Ganson	Urbana	H. P. Wilson	Urbana.
Clark	H. L. Rockfield	Springfield	T. L. Calvert	Selma.
Clermont	C. H. Ludlow	Gleneste	J. O. Rapp	Owensville.
Columbiana	J. C. Billingsley	Negley	F. G. Bowman	Elkton.
Coshocton	W. S. Simon	Coshocton	W. B. Miller	Coshocton.
Crawford	J. W. Stuckman	Bucyrus	M. Auck	Bucyrus.
West Cuyahoga	C. A. Wilkinson	Brooklyn	W. J. Poots	Vigil.
East Cuyahoga	E. C. Foote	Warrensville	George March	Chagrin Falls.
Darke	J. M. Brown	Arcanum	Ed. Ammon	Gordon.
Erie	C. F. Steen	Sandusky	Geo. J. Doerzbach	Sandusky.
Fairfield	Jacob Alspach	Lancaster	C. B. Whiley	Lancaster.
Fayette	Howard Hagler	Washington C. H.	Humphrey Jones	Washington C. H.
Fulton	A. F. Shaffer	Wauseon	G. W. Howard	Wauseon.
Geauga	W. C. Chamberlain	Chardon	F. H. Crittenden	Burton.
Greene	C. M. Austin	Bellebrook	H. L. Smith	Xenia.
Guernsey	J. W. Moon	Washington	R. S. Frame	Washington.
Hamilton	H. Lee Early	Home City	Wm. J. Bonnell	Miamiville.
Hancock	E. L. Groves	McComb	Jacob Stark	Findlay.
Hardin	J. M. Fisher	Ridgeway	T. P. Evans	Kenton.
Harrison	W. V. Scott	Hopedale	Chas. E. Stewart	Cadiz.
Jefferson	A. U. Moore	Smithfield	Chas. McKinney	Smithfield.
Knox	Geo. D. Neal	Mt. Vernon	Geo. D. Neal	Mt. Vernon.
Lawrence	J. A. Bowen	Labelle	E. J. Smith	Proctorville.
Licking	W. H. Kussmaul	Granville	B. N. Sigler	Homer.
Logan	John A. Harner	West Liberty	W. R. Niven	Bellefontaine.
Lorain	I. A. Freeman	LaGrange	H. C. Wilcox	Elyria.

TABLE I—COUNTY FAIRS IN OHIO FOR 1904—Concluded.

County.	President.	Postoffice.	Treasurer.	Postoffice.
Madison	L. W. Kilgore	London	M. L. Rea	London.
Mahoning	North Newton	Boardman	C. C. Fowler	Canfield.
Marion	H. W. Cookston	Cochranton	C. B. Jenkins	Marion.
Medina	I. H. Kennedy	Medina	C. E. Hoover	Medina.
Meigs	P. B. Stanbery	Pomeroy	John McQuigg	Pomeroy.
Mercer	C. F. Kruger	Celina	Wm. H. Romer	St. Henry.
Miami	W. F. Robbins	Piqua	D. M. Coppock	Pleasant Hill.
Monroe	W. C. Mooney	Woodsfield	W. C. Mooney	Woodsfield.
Montgomery	S. D. Bear	Dayton	Alonzo Michael	Alexandersville.
Morgan	Benjamin Reed	McConnellsville	Harry M. Finley	McConnelsville.
Morrow	J. M. Farley	Edison	J. G. Russell	Mt. Gilead.
Muskingum	Geo. K. Browning	Zanesville	A. F. Vest	Zanesville.
Noble	C. W. Pettay	Sarahsville	C. L. Hellyer	Sarahsville.
Paulding	Allen Bybee	Paulding	M. C. Bashore	Paulding.
Perry	T. J. Tracy	New Lexington	Pat Coyle	New Lexington.
Pike	W. A. Russell	Beaver	G. W. Baker	Beaver.
Portage	C. R. Doolittle	Kent	George F. Douthitt	Ravenna.
Preble	J. J. Kayler	Eaton	C. F. Brooke, Jr.	Eaton.
Putnam	W. J. Varner	Ottawa	Sam'l Cartwright	Ottawa.
Richland	W. H. Shyrock	Mansfield	John Hall	Mansfield.
Ross	F. M. De Weese	Chillicothe	F. Earl De Weese	Chillicothe.
Sandusky	J. J. Brim	Woodville	Wm. A. Gabel	Fremont.
Scioto	D. T. Blackburn	Rarden	W. A. McGeorge	Mt. Joy.
Seneca	J. H. Knapp	Republic	E. T. Umsted	Tiffin.
Shelby	J. C. Royon	Houston	John Duncan	Sidney.
Stark	J. J. Snyder	Paris	H. A. Wise	Canton.
Summit	John F. Moore	Copley	Geo. W. Brewster	Akron.
Trumbull	Albert Brown	Warren	R. W. Elliott	Warren.
Tuscarawas	Samuel Toomey	Canal Dover	A. C. Ruff	Canal Dover.
Union	F. O. Johnson	Claibourne	Homer Southard	Marysville.
Van Wert	Dr. B. F. Leslie	Convoy	E. B. Gilliland	Van Wert.
Warren	Edmond Stewart	Lebanon	Huse Bone	Lebanon.
Washington	Hiram True	Lower Salem	Chas. W. Zimmer	Stanleyville.
Wayne	John C. McClaran	Wooster	W. A. Wilson	Wooster.
Williams	Jacob Faber	Bryan	C. A. Fyke	Bryan.
Wood	W. H. Hannah	Tontogany	Hugh Stewart	Dunbridge.
Wyandot	E. E. Clinger	Upper Sandusky	Peter Frank, Jr.	Upper Sandusky.

COUNTY FAIRS IN OHIO FOR 1904, WITH TIME AND PLACE.

County.	Secretary.	Postoffice.	Time of Fair.	Place of Fair.
Adams	T. W. Ellison	West Union	Sept. 13, 14, 15 and 16	West Union.
Allen	T. B. Bowersock	Lima	Sept. 13, 14, 15, 16 and 17	Lima.
Ashtabula	Chas. C. Babcock	Jefferson	Aug. 16, 17 and 18	Jefferson.
Athens	H. H. Haning	Athens	Aug. 23, 24 and 25	Athens.
Auglaize	A. E. Schaffer	Wapakoneta	Sept. 27, 28, 29 and 30	Wapakoneta.
Belmont	Chas. B. Ryan	St. Clairsville	Aug. 31, Sept. 1 and 2	St. Clairsville.
Brown	J. W. Hedrick	Russellville	Oct. 4. 5, 6 and 7	Georgetown.
Butler	L. M. Larsh	Hamilton	Oct. 4, 5, 6 and 7	Hamilton.
Carroll	C. A. Tope	Carrollton	Oct. 9. 10, 11 and 12	Carrollton.
Champaign	J. W. Crowl	Urbana	Aug. 9, 10, 11 and 12	Urbana.
Clark	S. Van Bird	Springfield	Aug. 16, 17, 1 8and 19	Springfield.
Clermont	John Rowan	Blowville	Aug. 26, 27, 28 and 29	Boston (Owensville P. O.).
Columbiana	E. F. Moore	Lisbon	Sept. 13, 14 and 15	Lisbon.
Coshocton	Robert Boyd	Coshocton	Oct. 11, 12, 13 and 14	Coshocton.
Crawford	G. W. Miller	Bucyrus	Oct. 11, 12, 13 and 14	Bucyrus.
West Cuyahoga	O. R. Stone	Berea	Sept. 13, 14, 15 and 16	Berea.
East Cuyahoga	F. C. Gates	Chagrin Falls	Sept. 6, 7, 8 and 9	Chagrin Falls.
Darke	Orla E. Harrison	Greenville	Aug. 22, 23, 24, 25 and 26	Greenville.
Erie	F. H. Zerbe	Sandusky	Sept. 13, 14, 15 and 16	Sandusky.
Fairfield	W. T. McClenaghan	Lancaster	Oct. 12, 13, 14 and 15	Lancaster.
Fayette	Rell G. Allen	Washington C. H.	Aug. 9. 10, 11, 12	Washington C. H.
Fulton	Thomas Mikesell	Wauseon	Sept. 20, 21, 22 and 23	Ottokee.
Geauga	W. S. Ford	Burton	Sept. 20. 21. 22 and 23	Burton.
Greene	R. R. Grieve	Xenia	Aug. 3, 4 and 5	Xenia.
Guernsey	J. F. St. Clair	Washington	Sept. 27, 28, 29 and 30	Washington.
Hamilton	D. L. Sampson	Cincinnati	Aug. 16, 17, 18 and 19	Cincinnati (Oakley Park.)
Hancock	Wm. Demland	Findlay	Sept. 21, 22, 23 and 24	Findlay.
Hardin	M. M. Thompson	Mt. Victory	Aug. 23, 24, 25 and 26	Kenton.
Harrison	E. B. Kirby	Cadiz	Oct. 4, 5 and 6	Cadiz.
Jefferson	J. O. Hayne	Smithfield	Sept. 28, 29 and 30	Smithfield.
Knox	Isaac Errett	Mt. Vernon	Sept. 28, 29, 30 and Oct. 1.	Mt. Vernon
Lawrence	C. W. Kitts	Proctorville	Sept. 14, 15 and 16	Proctorville
Licking	J. M. Farmer	Newark	Oct. 4, 5, 6 and 7	Newark.
Logan	John P. Aikin	Bellefontaine	Aug. 16, 17, 18 and 19	Bellefontaine.
Lorain	Anthony Nieding	Elyria	Sept. 6, 7, 8 and 9	Elyria.
Madison	E. B. Pancake	London	Aug. 23, 24, 25 and 26	London.
Mahoning	B. L. Manchester	Salem	Sept. 27, 28 and 29	Canfield.
Marion	James A. Knapp	Marion	Sept. 27, 28, 29 and 30	Marion.
Medina	Frank Spellman	Medina	Aug. 30, 31, Sept. 1	Medina.
Meigs	A. V. Howell	Pomeroy	Sept. 7, 8 and 9	Pomeroy.
Mercer	Fred Heiby	Ft. Recovery	Aug. 15, 16, 17, 18 and 19	Celina.

COUNTY FAIRS IN OHIO FOR 1904, WITH TIME AND PLACE—Concluded.

County.	Secretary.	Postoffice.	Time of Fair.	Place of Fair.
Miami	W. I. Tenney	Troy	Sept. 19, 20, 21, 22 and 23	Troy.
Monroe	Geo. P. Dorr	Woodsfield	Sept. 20, 21 and 22	Woodsfield.
Montgomery	W. J. Ferguson	Dayton	Sept. 5, 6, 7, 8 and 9	Dayton.
Morgan	Geo. H. Black	McConnellsville	Sept. 27, 28 and 29	McConnelsville.
Morrow	G. J. Smith	Mt. Gilead	Oct. 4, 5, 6 and 7	Mt. Gilead.
Muskingum	R. Y. White	Chandlersville	Sept. 6, 7, 8 and 9	Zanesville.
Noble	Geo. M. Graham	Sarahsville	Sept. 13, 14 and 15	Sarahsville.
Paulding	J. H. Kerr	Paulding	Sept. 13, 14, 15 and 16	Paulding.
Perry	Chas. C. Chappelear	New Lexington	Sept. 15, 16 and 17	New Lexington.
Pike	T. W. Horton	Beaver	Aug. 30 and 31 and Sept. 1.	Beaver.
Portage	Lafayette Smith	Ravenna	Aug. 23, 24, 25 and 26	Ravenna.
Preble	G. W. Daugherty	Eaton	Sept. 12, 13, 14, 15 and 16	Eaton.
Putnam	A. P. Sandles	Ottawa	Oct. 4, 5, 6, 7 and 8	Ottawa.
Richland	John H. Coss	Mansfield	Aug. 24, 25, 26 and 27	Mansfield.
Ross	F. Earl De Weese	Chillicothe	Aug. 23. 24, 25 and 26	Chillicothe
Sandusky	A. W. Overmeyer	Fremont	Oct. 4, 5, 6 and 7	Fremont.
Scioto	W. A. McGeorge	Mt. Joy	Aug. 16, 17, 18 and 19	Mt. Joy.
Seneca	Morgan E. Ink	Republic	Sept. 6, 7, 8 and 9	Tiffin.
Shelby	J. E. Russell	Sidney	Sept. 6, 7, 8 and 9	Sidney.
Stark	J. H. Lehman	Canton	Sept. 27, 28, 29 and 30	Canton.
Summit	O. J. Swinehart	Akron	Oct. 4, 5, 6 and 7	Akron.
Trumbull	M. A. McClean	Warren	Aug. 30, 31, Sept. 1 and 2	Warren.
Tuscarawas	J. S. Karns	Canal Dover	Oct. 18, 19, 20 and 21	Canal Dover.
Union	W. F. Brodrick	Marysville	Oct. 4, 5, 6 and 7	Marysville.
Van Wert	J. F. Longworth	Van Wert	Sept. 6, 7, 8 and 9	Van Wert.
Warren	Geo. W. Carey	Lebanon	Sept. 20, 21, 22 and 23	Lebanon.
Washington	Edward Best	Marietta	Sept. 13, 14, 15 and 16	Marietta.
Wayne	G. J. Ebright	Shreve	Sept. 28, 29 and 30	Wooster.
Williams	C. C. Lattanner	Montpelier	Sept. 13, 14, 15, 16 and 17	Montpelier.
Wood	R. S. Sweet	Bowling Green	Sept. 27, 28, 29, 30 and Oct. 1	Bowling Green.
Wyandot	A. F. Schoenberger	Upper Sandusky	Sept. 6, 7, 8 and 9	Upper Sandusky.

TABLE II—ENTRIES AND AWARDS.

Counties.	Horses—All breeds and classes except speed.			Speed Horses.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	228	$747 00	$654 00	......	....	....
Allen	83	440 00	212 50	94	$2,975 00	$1,895 00
Ashtabula	90	336 00	167 00	37	1,800 00	1,800 00
Athens	47	167 00	110 00	12	1,000 00	700 00
Auglaize	152	460 00	342 00	139	3,200 00	2,732 50
Belmont	79	297 50	149 40	......	700 00	417 50
Brown	270	600 00	500 00	15	75 00	75 00
Butler	439	1,007 00	766 80	78	4.100 00	3,055 00
Carroll	195	370 00	296 00	55	1,200 00	930 00
Champaign	161	409 00	246 00	105	3,130 00	2,865 00
Clark	155	795 00	378 00	104	4,400 00	3,500 00
Clermont	233	690 00	613 00	20	730 00	730 00
Columbiana	85	367 00	253 00	35	1,000 00	887 45
Coshocton	166	1,081 50	575 00	57	2,950 00	2,225 00
Crawford	102	428 00	300 00	96	1,700 00	1,378 75
East Cuyahoga	154	309 50	211 00	45	1,400 00	1,041 25
West Cuyahoga	88	283 00	148 50	70	1,500 00	1 500 00
Darke	240	961 00	661 00	123	3,000 00	2,500 00
Erie	50	418 00	159 00	72	2,000 00	2,000 00
Fairfield	217	635 00	605 00	64	2,380 00	2,110 00
Fulton	80	527 00	210 50	50	1,400 00	1,390 00
Geauga	187	427 75	286 00	35	1,400 00	1,066 25
Greene	123	360 00	310 00	103	2,300 00	1,875 00
Guernsey	118	380 00	328 00	35	1,150 00	1,110 00
Hamilton	399	939 50	850 50	160	3,350 00	2,230 00
Hancock	163	1,000 00	543 00	105	2,600 00	1,481 25
Hardin	78	629 00	251 00	46	2,100 00	2,100 00
Harrison	84	267 00	203 00	35	1,050 00	945 00
Jefferson	120	472 00	472 00	30	1,100 00	1,100 00
Lawrence	40	185 00	133 43	22	330 00	330 00
Licking	115	566 00	446 00	39	2,550 00	2,052 50
Logan	205	700 00	475 00	62	2,400 00	2 350 00
Lorain	......	600 00	453 50	......	1,950 00	1,474 30
Madison	208	614 50	441 00	109	2,750 00	2,597 50
Mahoning	150	441 00	325 00	61	1,500 00	1,500 00
Marion	259	694 00	488 00	111	1,750 00	1,663 50
Medina	158	483 25	272 60	11	900 00	483 75
Meigs	93	387 00	238 00	38	1,200 00	647 50
Mercer	194	1,977 00	633 00	70	2,450 00	1,495 00
Miami	268	1.064 00	835 00	137	3,200 00	3,200 00
Monroe	43	370 00	176 00	60	1,550 00	1,505 00
Montgomery	194	786 00	574 50	99	5,600 00	5,425 00
Morgan	98	275 00	137 00	10	650 00	395 00
Morrow	150	605 00	440 75	101	2,200 00	1,640 00
Muskingum	167	769 00	471 00	76	2,950 00	2,274 48
Noble	64	300 75	208 75	20	300 00	300 00
Paulding	73	566 00	221 00	20	1,950 00	1,950 00
Perry	58	293 00	178 50	68	1,800 00	1,383 75

TABLE II—ENTRIES AND AWARDS—Continued.

Counties.	Horses—All breeds and classes except speed.			Speed Horses.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Pike	48	$490 00	$171 00	31	$1,295 00	$1,079 50
Portage	49	414 50	151 00	23	1,200 00	847 00
Preble	262	690 00	562 50	85	2,550 00	2,055 00
Putnam	170	946 00	600 00	50	2,100 00	660 00
Richland	95	374 00	147 46	20	1,800 00	925 00
Sandusky	194	965 00	528 00	49	2,000 00	1,104 23
Scioto	68	244 50	228 00	34	735 00	585 00
Seneca	140	745 00	374 00	22	1,650 00	924 00
Shelby	129	574 00	304 00	60	2,550 00	2,550 00
Stark	157	763 00	574 00	84	2,000 00	1,936 40
Summit	183	640 00	446 00	92	2,700 00	2,090 00
Trumbull	108	265 00	265 00	85	2,700 00	2,210 00
Tuscarawas	11	177 00	41 50	37	1,600 00	1,223 00
Union	117	476 00	324 00	108	2,700 00	1,660 00
Van Wert	128	1,145 00	463 00	87	3,000 00	2,101 75
Warren	160	385 00	365 00	105	1,525 00	1,510 00
Washington	45	312 00	185 00	45	2,700 00	1,567 50
Wayne	120	425 00	263 00	31	1,500 00	1,470 00
Williams	112	426 00	213 00	52	2,280 00	1,600 75
Wood	130	744 50	457 20	12	74 00	42 00
Wyandot	57	275 00	129 00	30	1,250 00	1,105 00
Total	9,606	$38,956 75	$24,740 89	4,076	$133,579 00	$107,627 61

TABLE II—ENTRIES AND AWARDS—Continued.

Counties.	Cattle—All breeds and classes.			Sheep—All breeds and classes.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	36	$244 00	$147 00	13	$57 00	$40 00
Allen	63	470 00	146 00	91	225 00	131 00
Ashtabula	125	436 00	257 00	73	116 00	112 00
Athens	43	116 00	87 00	37	83 00	69 00
Auglaize	72	304 00	217 00	15	193 00	27 00
Belmont	21	397 00	73 80	42	196 00	103 50
Brown	110	225 00	160 00	60	145 00	110 00
Butler	95	537 00	421 20	110	357 00	315 00
Carroll	77	274 00	159 00	117	210 00	204 00
Champaign	67	415 00	250 00	170	345 00	341 00
Clark	91	890 00	364 00	148	385 00	327 00
Clermont	59	292 00	199 00	70	180 00	140 00
Columbiana	92	372 00	286 00	92	239 00	177 00
Coshocton	222	1,019 00	844 00	137	539 00	363 00
Crawford	70	298 00	158 00	117	245 00	180 00
East Cuyahoga	109	612 50	181 00	78	269 25	139 50
West Cuyahoga	82	474 75	181 00	60	152 25	126 50
Darke	180	813 00	564 00	176	324 00	270 00
Erie	43	464 00	97 00	4	96 00	16 00
Fairfield	100	530 00	420 00	204	531 00	486 00
Fulton	104	486 00	204 00	141	229 50	140 50
Geauga	132	560 00	334 00	138	381 50	282 00
Greene	133	507 00	440 00	189	318 00	318 00
Guernsey	56	425 00	224 00	38	158 00	134 00
Hamilton	129	582 00	487 00	105	252 00	241 00
Hancock	55	450 00	191 00	145	300 00	205 00
Hardin	43	416 00	134 00	79	194 00	137 00
Harrison	41	185 00	99 00	76	107 00	104 00
Jefferson	50	268 00	207 00	40	143 00	143 00
Lawrence	48	147 50	84 50	5	27 00	8 00
Licking	102	496 00	215 00	108	369 00	305 00
Logan	54	330 00	166 00	81	380 00	229 00
Lorain	......	500 00	285 00	......	487 00	227 00
Madison	110	499 00	386 00	94	275 00	242 00
Mahoning	86	387 00	326 00	53	183 00	146 00
Marion	84	471 00	169 00	180	268 00	253 00
Medina	88	383 25	165 25	121	231 00	213 00
Meigs	16	185 00	40 00	38	90 00	90 00
Mercer	74	1,034 00	322 00	102	406 00	227 50
Miami	106	942 00	464 00	135	282 00	246 00
Monroe	9	112 00	40 00	33	192 00	139 00
Montgomery	140	939 00	683 00	128	438 00	438 00
Morgan	63	270 00	81 00	62	80 00	58 00
Morrow	86	297 00	194 00	58	196 00	123 00
Muskingum	81	645 00	362 00	80	196 00	131 00
Noble	14	120 00	44 00	26	69 00	54 00
Paulding	48	343 00	135 00	25	182 00	60 00
Perry	40	232 50	107 00	23	65 00	57 50
Pike	4	99 00	15 00	18	85 00	50 00

TABLE II.—ENTRIES AND AWARDS—Continued.

Counties.	Cattle—All breeds and classes.			Sheep—All breeds and classes.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Portage	61	$501 00	$219 50	83	$183 00	$174 00
Preble	90	696 00	381 70	162	237 00	207 00
Putnam	75	600 00	....	100	390 00	227 00
Richland	60	335 00	102 00	49	148 00	71 20
Sandusky	131	795 00	472 00	66	147 00	130 00
Scioto	30	981 00	128 50	53	555 00	159 25
Seneca	38	750 00	181 00	99	174 00	173 00
Shelby	40	330 00	79 00	57	234 00	117 00
Stark	118	540 00	449 00	158	329 00	329 00
Summit	154	567 00	515 00	147	310 50	246 50
Trumbull	95	380 00	380 00	37	84 00	84 00
Tuscarawas	......	....	....	31	75 00	67 00
Union	73	238 00	180 00	102	182 00	120 00
Van Wert	109	1,127 00	506 00	143	664 00	507 00
Warren	109	273 00	222 00	39	83 00	69 00
Washington	52	501 50	171 75	30	111 50	72 50
Wayne	43	296 00	81 00	19	145 50	48 50
Williams	100	295 00	187 00	123	145 00	117 00
Wood	138	763 00	434 00	95	182 00	144 00
Wyandot	42	245 00	119 00	27	72 00	55 00
Total	5,311	$31,708 00	$16,624 20	5,755	$15,923 00	$11,796 95

TABLE II—ENTRIES AND AWARDS—Continued.

Counties.	Swine—All breeds and classes.			Poultry.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	18	$90 00	$53 00	161	$121 50	$90 00
Allen	90	300 00	145 00	430	105 25	94 00
Ashtabula	34	210 00	148 00	129	106 50	77 00
Athens	13	50 00	28 00	34	50 00	11 00
Auglaize	62	280 00	123 00	410	155 00	112 48
Belmont	7	70 00	24 30	83	638 85	55 62
Brown	75	190 00	150 00	500	130 00	105 00
Butler	105	340 00	295 20	607	224 00	201 60
Carroll	72	200 00	158 00	174	79 20	49 00
Champaign	103	260 00	142 00	225	192 00	115 00
Clark	132	260 00	230 00	232	140 00	137 00
Clermont	49	192 00	124 00	130	76 00	62 00
Columbiana	40	120 00	97 00	75	60 00	32 00
Coshocton	115	295 00	219 00	449	324 40	162 10
Crawford	66	248 00	160 00	114	116 00	40 00
East Cuyahoga	74	280 50	140 75	136	237 50	80 90
West Cuyahoga	82	240 00	194 00	378	12 50	141 00
Darke	163	456 00	394 00	1,160	300 00	228 00
Erie	3	95 00	8 00	147	67 00	44 75
Fairfield	135	425 00	392 00	243	167 00	143 00
Fulton	113	247 50	178 50	363	280 35	161 40
Geauga	85	196 00	184 00	1,004	561 00	264 75
Greene	129	212 00	188 00	138	158 50	124 25
Guernsey	12	56 00	28 00	60	138 00	26 50
Hamilton	124	378 00	292 00	751	416 00	283 50
Hancock	47	220 00	113 00	193	225 00	141 50
Hardin	54	196 00	122 00	......	138 50	....
Harrison	30	81 00	57 00	66	42 50	24 25
Jefferson	25	112 00	98 00	40	75 00	35 00
Lawrence	6	32 00	13 00	18	33 80	9 00
Licking	83	320 00	219 00	497	203 50	142 85
Logan	76	300 00	244 00	402	200 00	125 00
Lorain	.....	....	364 50	......	....	406 20
Madison	121	344 00	331 00	48	148 50	38 00
Mahoning	49	159 00	145 00	552	226 50	176 00
Marion	137	195 00	177 00	140	324 00	84 75
Medina	82	152 00	129 50	180	....	77 50
Meigs	4	60 00	10 00	74	135 00	37 00
Mercer	148	660 80	331 50	327	190 00	145 50
Miami	120	335 00	284 00	357	194 00	160 00
Monroe	29	172 00	109 00	66	180 00	24 00
Montgomery	150	818 00	793 00	644	273 50	211 25
Morgan	64	93 00	68 00	447	163 60	116 65
Morrow	56	215 00	125 00	307	245 25	100 00
Muskingum	64	252 00	162 00	373	239 35	220 10
Noble	.....	....	....	5	111 00	3 50
Paulding	65	260 00	124 00	70	104 00	16 00
Perry	28	124 75	68 75	106	84 00	79 50
Pike	11	101 00	38 00	72	90 25	25 75

TABLE II—ENTRIES AND AWARDS—Continued.

Counties.	Swine—All breeds and classes.			Poultry.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Portage	17	$135 00	$53 00	8	$250 00	$8 00
Preble	80	288 00	180 10	223	167 75	114 40
Putnam	120	452 00	251 00	300	273 00	79 00
Richland	35	229 00	59 40	501	192 00	98 00
Sandusky	88	405 00	217 00	766	675 25	460 60
Scioto	24	332 50	68 75	627	247 00	209 25
Seneca	106	194 00	165 00	116	300 00	60 00
Shelby	76	204 00	135 00	489	150 00	82 33
Stark	199	288 00	267 00	467	247 75	231 60
Summit	231	375 00	367 50	825	689 75	320 00
Trumbull	50	108 00	108 00	87	45 00	35 00
Tuscarawas	19	75 00	47 00	65	80 00	29 35
Union	98	148 00	98 00	670	300 00	240 00
Van Wert	122	407 00	380 00	1,077	460 00	348 50
Warren	78	198 00	169 00	325	293 75	138 75
Washington	33	151 25	105 50	42	115 25	27 50
Wayne	21	149 50	55 50	87	154 60	43 45
Williams	61	225 00	115 00	148	146 45	51 25
Wood	152	309 00	290 00	1,915	403 75	362 25
Wyandot	21	95 00	42 00	5	137 50	3 50
Total	4,981	$15,661 80	$11,395 75	21,628	$13,812 60	$8,184 38

TABLE II—ENTRIES AND AWARDS—Continued.

Counties.	Machinery and Agricultural Implements.			Manufactures.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	10	$16 00	$12 00	17	$16 00	$13 00
Allen	10	5 00	5 00	22	15 00	8 00
Ashtabula	2	28 25	1 50	......	....	....
Athens	......	....	....	......	....	....
Auglaize	200	....	....	97	....	....
Belmont	42	50 50	18 00	57	40 75	5 85
Brown	25	25 00	18 00	4	15 00	11 00
Butler	......	....	....	......	....	....
Carroll	2	....	....	17	24 50	20 00
Champaign	2	15 00	10 00	9	21 00	15 00
Clark	......	....	....	......	....	....
Clermont	......	....	....	7	6 00	5 00
Columbiana	23	33 00	28 00	......	....	....
Coshocton	......	....	....	46	117 75	87 75
Crawford	4	....	....	6	....	....
East Cuyahoga	45	69 25	23 50	53	63 50	52 25
West Cuyahoga	49	65 50	25 00	21	....	....
Darke	8	31 00	11 00	......	....	....
Erie	42	54 00	33 75	17	52 00	20 00
Fairfield	......	....	....	......	....	....
Fulton	16	15 00	10 00	6	79 00	24 00
Geauga	5	15 50	8 00	......	....	....
Greene	......	....	....	270	110 75	110 00
Guernsey	10	25 00	3 00	6	25 00	9 00
Hamilton	5	127 00	108 00	......	....	....
Hancock	......	9 00	....	2	9 00	6 00
Hardin	......	....	....	......	....	....
Harrison	8	43 00	5 50	......	....	....
Jefferson	46	75 00	51 00	15	50 00	35 00
Lawrence	......	....	....	......	....	....
Licking	3	46 00	8 00	......	....	....
Logan	......	....	....	77	225 00	190 00
Lorain	......	....	27 50	......	....	....
Madison	......	....	....	......	....	....
Mahoning	34	99 00	50 00	......	....	....
Marion	18	200 00	170 00	......	....	....
Medina	31	....	51 25	......	....	....
Meigs	......	....	....	......	....	....
Mercer	......	....	....	60	82 00	49 50
Miami	60	50 00	50 00	105	....	....
Monroe	119	150 00	21 00	350	145 00	15 00
Montgomery	......	....	....	11	110 00	105 00
Morgan	18	48 75	15 00	8	16 00	16 00
Morrow	......	....	....	......	....	....
Muskingum	3	4 00	26 00	170	47 00	87 00
Noble	......	....	....	43	124 50	46 00
Paulding	......	....	....	......	....	....
Perry	......	20 00	....	......	....	....
Pike	......	....	....	......	....	....

TABLE II—ENTRIES AND AWARDS—Continued.

Counties.	Machinery and Agricultural Implements.			Manufactures.		
—	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Portage	......	....	....	21	$70 00	$31 00
Preble	4	$89 00	$58 50	10	25 50	25 50
Putnam	......	....	....	200	160 00	105 00
Richland	2	10 00	8 00	......	....	....
Sandusky	41	172 00	98 75	97	197 25	114 00
Scioto	9	41 50	11 50	......	....	....
Seneca	......	....	....	......	....	....
Shelby	......	....	....	......	....	....
Stark	......	....	....	......	....	....
Summit	26	....	....	35	127 50	50 00
Trumbull	......	....	....	......	....	....
Tuscarawas	1	40 00	10 00	......	....	....
Union	......	....	....	......	....	....
Van Wert	89	69 00	75 00	23	154 00	95 00
Warren	......	....	....	18	55 50	11 50
Washington	......	....	....	2	95 50	8 00
Wayne	......	....	....	......	....	....
Williams	......	....	....	......	....	....
Wood	112	....	....	28	....	....
Wyandot	3	10 00	10 00	2	....	....
Total	1,127	$1,751 75	$1,062 25	1,932	$2,280 00	$1,370 35

TABLE II—ENTRIES AND AWARDS—Continued.

Counties.	Farm Products.			Fruits and Flowers.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	306	$89 00	$83 75	90	$47 00	$34 25
Allen	180	75 25	67 50	35	55 00	13 00
Ashtabula	180	104 75	68 00	304	108 60	67 15
Athens	67	90 50	23 50	372	226 00	110 00
Auglaize	1,080	400 00	257 50	190	81 00	77 50
Belmont	71	236 55	39 91	28	12 00	12 00
Brown	675	135 00	125 00	1,000	230 00	175 00
Butler	242	114 50	81 90	266	101 00	90 45
Carroll	169	63 00	46 00	274	72 25	65 00
Champaign	358	125 00	116 00	568	148 50	140 50
Clark	141	150 00	75 00	462	500 00	404 00
Clermont	320	75 65	55 60	748	207 05	184 75
Columbiana	425	102 00	90 00	340	149 00	134 00
Coshocton	552	243 50	219 50	445	140 00	125 50
Crawford	278	220 00	93 20	480	200 00	50 00
East Cuyahoga	192	125 30	78 90	456	81 60	109 95
West Cuyahoga	283	96 90	64 55	432	74 30	46 35
Darke	580	325 00	255 50	890	240 50	197 50
Erie	235	100 00	99 60	270	146 00	137 25
Fairfield	292	408 00	285 00	81	165 00	140 00
Fulton	252	94 50	58 00	653	132 90	112 20
Geauga	371	120 75	93 75	614	123 30	89 75
Greene	78	60 00	50 00	110	190 00	190 00
Guernsey	1,025	123 00	118 00	400	66 75	65 00
Hamilton	180	99 00	71 50	202	357 75	333 75
Hancock	220	300 00	63 75	197	300 00	77 00
Hardin	94	113 75	51 50	......	....	....
Harrison	40	24 00	12 50	147	42 00	42 00
Jefferson	97	75 00	75 00	143	80 00	80 00
Lawrence	182	49 40	35 40	117	61 30	42 40
Licking	156	154 00	103 00	172	219 00	172 25
Logan	170	230 00	50 00	430	200 00	120 00
Madison	174	211 25	161 50	201	102 50	80 75
Mahoning	409	200 00	139 15	476	162 05	157 00
Marion	894	140 00	138 80	597	208 00	144 95
Medina	657	48 80	76 95	123	42 10	82 55
Meigs	90	60 00	39 00	92	30 00	19 00
Mercer	138	72 75	42 00	205	123 50	62 75
Miami	249	190 00	146 00	405	228 00	193 00
Monroe	105	140 00	30 00	95	160 00	35 00
Montgomery	444	704 75	382 00	432	411 60	313 15
Morgan	103	44 75	23 25	155	48 75	15 75
Morrow	379	83 25	76 50	......	....	....
Muskingum	......	127 70	87 90	222	301 80	227 45
Noble	75	84 00	37 00	183	128 25	59 75
Paulding	170	73 00	28 00	......	....	....
Perry	145	117 75	95 00	312	145 50	142 50
Pike	98	20 55	17 00	24	21 75	16 25

TABLE II—ENTRIES AND AWARDS—Continued.

Counties.	Farm Products.			Fruits and Flowers.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Portage	67	$92 25	$23 65	203	$147 30	$72 50
Preble	341	253 00	163 10	551	126 00	100 25
Putnam	500	200 00	175 00	300	60 00	36 85
Richland	452	150 50	174 80	14	5 00	5 00
Sandusky	511	148 30	119 85	219	124 00	115 00
Scioto	208	76 70	45 60	244	97 15	49 20
Seneca	171	207 00	180 00	243	130 00	106 00
Shelby	231	70 00	45 50	144	78 00	61 05
Stark	386	157 45	153 05	653	259 00	237 75
Summit	544	255 85	203 20	642	328 35	303 70
Trumbull	......	100 00	85 00	......	80 00	80 00
Tuscarawas	60	180 00	132 50	365	147 00	74 20
Union	370	500 00	440 00	123	125 00	85 00
Van Wert	816	250 00	239 00	2,126	210 00	312 50
Warren	170	54 25	45 25	315	108 00	101 50
Washington	25	79 45	48 40	55	56 15	37 50
Wayne	60	123 65	98 75	54	63 65	26 25
Williams	174	42 65	37 85	548	136 85	84 03
Wood	431	338 75	308 70	317	153 00	134 00
Wyandot	148	83 50	62 00	155	82 00	57 20
Total	19,286	$10,405 15	$7,309 56	21,709	$9,388 05	$7,268 28

TABLE II—ENTRIES AND AWARDS—Continued.

Counties.	Household Productions.			Fine Arts.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	909	$222 50	$204 25	171	$95 00	$75 50
Allen	600	265 00	187 00	1,025	450 25	298 40
Ashtabula	956	232 00	206 35	227	142 25	127 00
Athens	98	75 00	28 00	16	24 00	13 00
Auglaize	1,860	611 00	397 50	761	180 00	152 00
Belmont	200	151 75	69 18	22	15 00	6 30
Brown	......	....	....	40	12 00	12 00
Butler	1,646	329 00	280 80	326	156 00	140 40
Carroll	445	148 25	145 00	14	18 00	14 00
Champaign	1,033	290 75	240 50	431	361 50	201 50
Clark	627	330 00	255 00	261	365 00	278 00
Clermont	1,088	215 50	186 55	217	116 50	84 75
Columbiana	675	125 00	114 00	26	23 00	21 00
Coshocton	532	217 25	206 25	308	133 00	130 00
Crawford	310	262 00	123 00	1,260	560 00	402 00
East Cuyahoga	670	149 65	116 50	279	123 75	95 00
West Cuyahoga	702	142 90	115 75	42	33 25	19 35
Darke	650	37 00	29 70	875	694 50	413 44
Erie	......	....	....	484	510 00	225 65
Fairfield	441	356 00	326 00	278	242 00	228 00
Fulton	1,002	256 45	187 75	335	238 70	177 20
Geauga	961	191 25	177 50	118	105 50	77 00
Greene	80	75 00	35 00	280	212 75	201 25
Guernsey	825	112 00	65 00	50	19 00	20 00
Hamilton	786	286 50	274 75	559	173 25	173 25
Hancock	164	200 00	82 75	97	600 00	317 28
Hardin	390	325 75	146 00	113	98 00	38 00
Harrison	154	170 75	65 45	17	33 00	7 75
Jefferson	617	250 00	250 00	43	55 00	55 00
Lawrence	285	73 50	52 20	10	23 00	15 00
Licking	462	434 00	388 50	228	262 50	235 50
Logan	1,704	500 00	345 00	294	550 00	307 00
Lorain	......	....	211 65	......	....	222 60
Madison	496	308 50	224 75	42	55 00	32 00
Mahoning	980	125 10	110 70	190	117 00	110 50
Marion	695	140 10	127 50	157	182 25	122 75
Medina	463	160 00	147 80	102	80 10	59 25
Meigs	57	54 00	24 00	4	13 00	6 00
Mercer	1,022	428 00	369 50	660	660 00	360 00
Miami	1,392	530 00	477 00	526	240 00	226 00
Monroe	200	175 00	20 00	115	150 00	13 00
Montgomery	1,732	470 00	424 00	384	194 50	177 00
Morgan	268	61 25	23 25	75	24 00	14 50
Morrow	1,341	547 75	437 00	......	....	....
Muskingum	36	134 25	47 75	117	315 75	207 30
Noble	......	....	....	4	31 00	2 50
Paulding	600	340 00	120 00	700	184 00	140 00
Perry	145	70 50	76 75	52	57 50	36 00
Pike	105	84 60	35 25	......	....	....

TABLE II—ENTRIES AND AWARDS—Continued.

Counties.	Household Productions.			Fine Arts.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Portage	221	$134 70	$57 05	22	$59 00	$18 50
Preble	1,570	343 75	263 35	384	321 50	183 60
Putnam	1,925	360 00	320 00	2,785	735 00	600 00
Richland	175	....	....	......	....	....
Sandusky	476	255 05	175 00	177	117 00	80 00
Scioto	320	108 00	64 50	11	28 50	5 20
Seneca	780	262 00	216 00	145	394 00	159 00
Shelby	568	67 00	50 00	1,250	720 00	290 55
Stark	1,074	305 60	296 70	234	307 00	294 50
Summit	751	238 00	208 80	365	166 55	154 75
Trumbull	......	80 00	75 00	......	55 00	50 00
Tuscarawas	6	20 00	12 00	26	47 00	38 00
Union	530	450 00	420 00	170	200 00	96 00
Van Wert	881	385 00	225 25	347	270 00	471 40
Warren	1,195	240 50	209 00	78	42 75	36 75
Washington	124	251 85	65 45	95	212 45	79 35
Wayne	440	235 10	163 70	80	88 00	54 80
Williams	1,015	280 60	180 30	856	339 55	125 45
Wood	1,238	282 75	278 45	414	176 25	165 75
Wyandot	442	153 00	92 05	228	112 75	66 73
Total	44,135	$15,117 70	$11,550 73	20,002	$13,322 10	$9,261 25

TABLE II.—ENTRIES AND AWARDS—Concluded.

Counties.	Merchandise.		
	Number of entries.	Amount offered.	Amount awarded.
Adams	8	$16 00	$9 00
Allen	25	140 25	83 25
Ashtabula	.....	....	....
Athens	48	36 00	18 00
Auglaize	.....	....	150 00
Belmont	.....	....	....
Brown	.....	....	5 90
Butler	.....	....	....
Carroll	141	41 00	49 00
Champaign	10	39 00	18 00
Clark	.....	....	....
Clermont	.....	....	....
Columbiana	.....	....	....
Coshocton	8	165 00	60 00
Crawford	12	80 00	32 00
East Cuyahoga	111	55 25	51 45
West Cuyahoga	31	70 50	35 50
Darke	40	790 00	679 27
Erie	.....	....	....
Fairfield	.....	....	....
Fulton	210	152 30	122 35
Geauga	176	38 25	26 25
Greene	.....	....	....
Guernsey	750	75 00	65 80
Hamilton	.....	....	....
Hancock	5	195 00	41 50
Hardin	.....	10 00	....
Harrison	.....	45 00	....
Jefferson	50	70 00	50 00
Lawrence	5	30 70	21 02
Licking	.....	....	....
Logan	10	50 00	13 00
Lorain	.....	....	....
Madison	.....	....	....
Mahoning	20	12 50	11 50
Marion	41	11 00	9 00
Medina	.....	....	....
Meigs	.....	....	....
Mercer	.....	....	....
Miami	24	....	....
Monroe	250	45 00	19 35
Montgomery	.....	....	....
Morgan	17	22 25	20 00
Morrow	.....	....	....
Muskingum	3	40 00	9 00
Noble	.....	....	....
Paulding	14	79 00	47 00
Perry	.....	....	....

TABLE II—ENTRIES AND AWARDS—Concluded.

Counties.	Merchandise.		
	Number of entries.	Amount offered.	Amount awarded.
Pike	......	....	....
Portage	......	....	....
Preble	......	....	....
Putnam	225	$500 00	$423 0
Richland	......	500 00	456 47
Sandusky	......	....	....
Scioto	......	....	....
Seneca	19	87 00	66 00
Shelby	......	....	....
Stark	2	92 00	55 00
Summit	20	22 50	7 50
Trumbull	......	....	....
Tuscarawas	6	16 00	12 00
Union	147	150 00	75 00
Van Wert	......	....	....
Warren	......	....	....
Washington	21	119 60	54 50
Wayne	3	36 00	10 00
Williams	47	72 20	22 90
Wood	28	44 50	28 00
Wyandot	2	110 00	12 00
Total	2,529	$4,058 80	$2,869 51

TABLE III—PROPERTY RECEIPTS, DISBURSEMENTS, ETC., OF COUNTY AGRICULTURAL SOCIETIES IN 1904.

Counties.	Number of acres in Fair Grounds.	Grounds owned by the society or leased.	If owned, cash value of real estate and improvements thereon.	Amount of indebtedness, if any, on all accounts.	Number of members.	Time of annual election.
Adams	16½	Owned	$8,000 00	$1,890 02	134	January 30.
Allen	30	Leased			875	September 16.
Ashtabula	14	Owned	10,000 00		152	January.
Athens	27	Owned	15,000 00	6,000 00	54	December 31.
Auglaize	40	Owned	15,000 00		14	September 30.
Belmont	17	*Owned			163	August 31.
Brown	20	Owned	10,000 00		600	January 23.
Butler	55	Owned	55,000 00	17,000 00	10	October 6.
Carroll	28	Owned		1,880 00	14	January 8.
Champaign	50	Owned	15,000 00		102	January 16.
Clark	46	*Owned		500 00	210	December 10.
Clermont	24	Owned	10,000 00	600 00		August 29.
Columbiana	26	Owned	10,000 00	3,000 00	512	November.
Coshocton	38	Owned	35,000 00	2,200 00	16	January.
Crawford	30	*Owned	6,000 00	81 51	241	October 13.
East Cuyahoga	61¾	*Owned			22	January 23.
West Cuyahoga	20	Owned	15,000 00	250 00	169	January 28.
Darke	45	Owned	50,000 00		3,023	August 26.
Erie	45	Leased			368	November 9.
Fairfield	76	*Owned	75,000 00	20,000 00	363	January 30.
Fulton	40	Owned	7,800 00		145	January 4.
Geauga	22	Owned		1,400 00	450	January 7.
Greene	39	Leased			14	August 5.
Guernsey	30	Owned	4,000 00		20	January.
Hamilton	44	*Owned	50,000 00	1,150 00	347	August 18.
Hancock	70	Owned	15,000 00	1,400 00	360	January 30.

TABLE III—PROPERTY, RECEIPTS, DISBURSEMENTS, ETC., OF COUNTY AGRICULTURAL SOCIETIES IN 1904—Continued.

Counties.	Number of acres in Fair Grounds.	Grounds owned by the society or leased.	If owned, cash value of real estate and improvements thereon.	Amount of indebtedness, if any, on all accounts.	Number of members.	Time of annual election.
Hardin	45½	Owned	$4,500 00	$1,600 00	30	January.
Harrison	40	Leased				January.
Jefferson	12¾	Leased			439	November 12.
Lawrence	12	Leased			65	January.
Licking	80	Owned	75,000 00	6,422 65	807	October 29.
Logan	37	Owned	20,000 00	2,400 00	2,000	January.
Lorain	32	Owned	35,000 00	9,300 00	458	January.
Madison	46	Owned	18,000 00	150 00	1,164	January 5.
Mahoning	40	Owned	6,000 00		185	November 2.
Marion	47	*Owned	25,000 00		236	January.
Medina	27¾	Owned	8,000 00			January.
Meigs	70	Owned	12,000 00	15,000 00	33	October 8.
Mercer	45	*Owned	26,000 00	3,300 80	15	August 20.
Miami	51	Owned	30,000 00		24	November 8.
Monroe	35	Owned	20,000 00	7,000 00	232	January 30.
Montgomery	42	*Owned	110,000 00		22	May 7.
Morgan	28	Owned	3,500 00	3,300 00	94	January 30.
Morrow	35	Owned	8,000 00	439 53	257	October 7.
Muskingum	44	Owned	60,000 00	14,000 00	250	January 30.
Noble	10	Owned	3,500 00		33	January 30.
Paulding	33	Owned	9,500 00	2,068 40	600	September 16.
Perry	20	Leased		600 00	55	January 30.
Pike	20	Leased		650 00	33	January.
Portage	22¾	Owned	10,000 00	7,000 00	527	January 9.
Preble	40	Owned	20,000 00		13	September 16.
Putnam	40	Owned	26,000 00	1,679 56	184	January 30.

Richland	30	*Owned	$25,000 00		600	August 27.
Sandusky	35	Owned	9,000 00	$1,500 00	1,478	February 6.
Scioto	20	Leased		350 00	57	January 25.
Seneca	88	Leased			227	December 8.
Shelby	43	*Owned	25,000 00			
Stark	53	*Owned	45,000 00	15,000 00	311	January.
Summit	47	Owned	52,000 00	15,000 00	123	January.
Trumbull	35	*Owned	40,000 00	5,500 00		December 10.
Tuscarawas	29	Owned	37,000 00	9,000 00	1,200	January 14.
Union	50	Owned	10,000 00	1,604 98	1,853	December 17.
Van Wert	37½	Owned	16,000 00	1,525 50	2,978	September 8.
Warren	33	Leased	10,000 00	250 00	300	September 23.
Washington	33	Owned	12,000 00	8,500 00	272	September 15.
Wayne	40	*Owned	8,000 00	2,000 00	140	January 2.
Williams	39¼	Owned	9,000 00	3,200 00	510	September 16.
Wood	57	Leased			221	January 4.
Wyandot	32	Leased			107	October 29
Total	2,611¾		$1,233,800 00	$195,692 95	26,511	

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* Owned by county.

Where less than twenty-five members are indicated, the number undoubtedly refers to members of the Board of Directors.

TABLE III—PROPERTY, RECEIPTS, DISBURSEMENTS, ETC., OF COUNTY AGRICULTURAL SOCIETIES IN 1904—Continued.

Counties.	Cash in treasury at beginning of fiscal year.	Amount received from gate admissions.	Amount received from entry fees.
Adams		$1,362 25	$90 40
Allen		3,754 70	664 50
Ashtabula	$209 02	3,159 75	1,048 50
Athens	55 76	2,165 50	147 05
Auglaize	579 94	4,567 65	1,152 45
Belmont	9 37	1,041 90	106 46
Brown	609 05	2,678 40	5 50
Butler	6,211 91	7,677 75	1,285 00
Carroll	312 36	2,424 85	560 05
Champaign	3,003 16	3,476 59	1,592 78
Clark	21 64	5,015 42	1,649 65
Clermont	192 13	2,015 25	254 40
Columbiana	1,212 08	2,678 00	357 50
Coshocton		6,452 95	975 43
Crawford	190 43	2,908 25	697 00
East Cuyahoga	124 57	2,415 65	177 00
West Cuyahoga	174 33	1 648 95	1,032 20
Darke	1,049 06	9,924 01	878 50
Erie	103 49	1,857 80	1,007 90
Fairfield	3,484 54	9,247 00	1,292 00
Fulton	3 25	2,778 85	678 50
Geauga	38 55	3,277 25	332 40
Greene	305 51	3,762 05	935 25
Guernsey	66 51	2,186 90	353 00
Hamilton	86 72	4,799 38	1,330 00

Hancock	7 94	3,401 25	790 12
Hardin	450 00	3,191 00	1.205 00
Harrison	248 52	1,578 95	105 00
Jefferson	1,365 34	1,525 00	400 00
Lawrence	147 33	811 85	241 28
Licking	....	4,469 20	1,260 64
Logan	....	3,879 25	1,242 13
Lorain	....	3,719 70	60 00
Madison	577 94	4,596 18	1,621 30
Mahoning	177 75	4,684 75	505 10
Marion	2,283 16	3.204 25	514 75
Medina	633 15	2,527 54	91 25
Meigs	....	2,337 50	....
Mercer	1,209 47	4,260 40	496 25
Miami	3,934 81	5,227 05	1,697 00
Monroe	1,663 40	2,771 00	759 00
Montgomery	2,485 90	9,022 95	2,918 00
Morgan	175 30	1,115 95	40 00
Morrow	38 84	2,900 00	1 033 40
Muskingum	27 26	4,593 67	883 02
Noble	345 53	568 90	305 90
Paulding	....	2,450 00	720 00
Perry	516 70	1,496 65	628 97
Pike	463 84	1,161 00	342 05
Portage	16 15	1,537 25	264 20
Preble	209 00	4,934 00	907 50
Putnam	....	3,862 60	206 00
Richland	51 42	1,681 72	266 32
Sandusky	333 04	4,404 80	548 40
Scioto	246 78	826 25	184 50
Seneca	2,117 00	3,284 00	280 00
Shelby	614 00	3,521 95	1,080 00
Stark	....	3,644 00	1,164 60
Summit	1 291 01	7,250 04	1,536 40
Trumbull	128 62	3,446 20	825 00
Tuscarawas	1,661 10	2,494 30	395 55
Union	....	3,000 00	1,197 00
Van Wert	....	6,174 75	577 80
Warren	$235 94	$2,421 00	$617 50

TABLE III—PROPERTY, RECEIPTS, DISBURSEMENTS, ETC., OF COUNTY AGRICULTURAL SOCIETIES IN 1904—Continued.

Counties.	Cash in treasury at beginning of fiscal year.	Amount received from gate admissions.	Amount received from entry fees.
Washington	21 04	3,624 35	390 00
Wayne	....	1,942 50	849 40
Williams	482 84	4,759 82	330 50
Wood	46 80	....	221 00
Wyandot	....	1,185 39	554 38
Total	$42,250 30	$232,768 96	$48,859 63

TABLE III—PROPERTY, RECEIPTS, DISBURSEMENTS, ETC., OF COUNTY AGRICULTURAL SOCIETIES IN 1904—Continued.

Counties.	Amount received from booth rents and privilege permits.	Amount received from other sources.	Amount paid in premiums.	Amount paid for real estate, buildings and permanent improvements.	Amount paid for current expenses other than premiums.	Amount paid on old indebtedness.	Balance cash in treasury.	Amount of unpaid bills and accounts, if any, for current year.
Adams	$277 00	$293 50	$1,415 75	$516 83	$905 28	....	....	$814 71
Allen	845 75	1,554 55	3,285 65	500 72	2,691 85	$341 28	....	722 75
Ashtabula	788 00	1,364 60	3,025 25	....	2,436 86	....	1,107 76	....
Athens	502 00	935 12	1,198 00	320 16	1,087 76	450 00	749 51	180 00
Auglaize	2,448 00	289 75	4,588 48	3,566 56	1,920 16	....	....	1,037 41
Belmont	337 10	2,257 00	983 09	1,879 18	343 31	400 00	146 25	....
Brown	319 25	722 24	1,446 90	195 00	1,160 44	....	1,532 10	....
Butler	2,388 31	3,998 50	5,648 35	4,727 77	6,591 27	1,000 00	3,594 08	....
Carroll	538 00	859 99	2,135 00	930 00	1,628 92	....	1 33	....
Champaign	1,125 50	....	4,558 38	361 05	1,811 86	....	2,466 74	....
Clark	1,834 16	1,907 26	5,948 00	1,000 00	3,330 83	....	106 02	....
Clermont	500 00	775 95	2,384 65	409 48	886 24	....	57 36	....
Columbiana	538 00	1,020 50	2,119 45	645 96	1,809 56	....	1,231 11	....
Coshocton	1,370 56	501 67	5,217 10	166 19	2,620 03	1,297 29	....	....
Crawford	893 74	884 82	2,916 95	844 55	1,812 74	....	....	81 57
East Cuyahoga	508 88	1,608 54	2,321 95	1,015 16	1,388 60	....	108 93	....
West Cuyahoga	780 85	1,823 87	2,597 50	1,538 35	1,283 22	....	41 13	....
Darke	2,796 50	8 50	6,203 41	2,126 60	5,413 50	....	912 86	....
Erie	536 48	2,802 40	847 55	556 62	4,825 36	....	78 54	....
Fairfield	2,020 00	1,235 00	5,135 00	3,600 00	3,800 00	....	4,743 54	....
Fulton	652 75	637 24	2,867 80	349 65	1,330 92	52 11	150 11	....
Geauga	682 00	323 67	2,881 75	....	1,680 47	....	91 65	....
Greene	940 50	966 00	3,841 50	1,125 35	1,156 22	....	836 24	....
Guernsey	211 00	823 88	1,869 05	100 00	1,028 73	....	642 51	....

TABLE III—PROPERTY, RECEIPTS, DISBURSEMENTS, ETC., OF COUNTY AGRICULTURAL SOCIETIES IN 1904—Concluded.

Counties.	Amount received from booth rents and privilege permits.	Amount received from other sources.	Amount paid in premiums.	Amount paid for real estate, buildings and permanent improvements.	Amount paid for current expenses other than premiums.	Amount paid on old indebtedness.	Balance cash in treasury.	Amount of unpaid bills and accounts, if any, for current year.
Hamilton	$1,670 65	$3,485 00	$5,345 25	$166 00	$5,738 84	$100 00	$21 66	....
Hancock	705 30	270 60	3,263 03	621 92	1,105 06	....	185 20	$645 00
Hardin	684 35	....	2,979 50	370 50	945 54	700 00	534 81	110 00
Harrison	195 50	133 48	1,564 95	100 00	346 81	....	249 69	400 00
Jefferson	326 50	943 00	2,651 00	436 25	584 97	....	887 62	211 15
Lawrence	80 05	192 50	743 95	87 54	437 11	....	204 41	....
Licking	797 70	1,510 00	4,277 20	815 93	2,042 58	810 00	91 83	422 65
Logan	2,183 30	829 51	4,398 00	1,147 00	1,989 19	600 00	....	....
Lorain	550 00	2,499 13	3,672 25	1,050 00	774 10	....	1,332 48	....
Madison	885 75	1,602 45	4,534 50	315 00	1,660 78	1,801 14	972 20	150 00
Mahoning	788 75	826 19	3,196 85	600 00	1,692 91	....	1,492 78	....
Marion	984 00	1,001 10	3,252 05	1,708 46	1,676 38	250 00	1,100 37	100 00
Medina	628 80	128 65	1,332 10	892 88	1,606 11	....	178 30	....
Meigs	450 00	100 00	1,234 90	463 95	1,148 76	....	39 89	....
Mercer	1,434 68	606 97	3,694 00	1,601 75	1,232 11	879 75	....	600 16
Miami	1,828 50	2,305 35	6,281 00	1,895 00	3,162 85	....	3,653 86	....
Monroe	598 00	19,293 62	2,146 35	20,168 50	1,667 22	954 00	148 95	75 00
Montgomery	2,269 43	3,086 20	9,525 90	3,568 52	4,519 84	....	2,168 22	....
Morgan	315 50	94 00	983 40	150 17	488 29	150 86	....	55 00
Morrow	898 52	397 58	3,136 25	950 42	1,621 20	....	....	....
Muskingum	936 50	6,831 47	4,252 48	1,329 76	5,692 47	1,901 94	95 27	81 94
Noble	108 00	24 00	755 50	....	560 46	....	36 37	....
Paulding	704 50	956 50	2,913 00	700 00	1,219 00	....	....	....
Perry	388 50	1,273 80	2,225 25	1,200 00	879 37	....	....	....

Pike	206 55	706 00	1,447 75	554 02	765 95	....	120 72	650 00
Portage	385 30	1,277 20	1,655 20	100 00	1,642 94	....	81 96	....
Preble	1,487 65	1,416 55	4,295 40	1,070 00	4,104 00	....	....	....
Putnam	1,787 55	3,024 27	3,715 85	1,947 41	3,052 66	....	....	69 75
Richland	397 50	1,352 25	2,047 33	159 99	1,490 78	....	51 11	....
Sandusky	588 50	1,000 00	3,402 28	220 78	2,215 25	987 53	150 90	....
Scioto	240 35	536 65	1,554 75	68 25	236 40	....	175 13	....
Seneca	616 00	....	2,604 00	....	2,188 00	....	1,505 00	....
Shelby	824 05	1,608 00	3,734 88	2,143 89	1,780 79	....	....	....
Stark	1,233 63	2,300 00	4,774 00	....	2,869 02	909 10	....	....
Summit	1,200 00	2,439 25	2,802 55	2,331 15	8,499 78	....	83 22	20 40
Trumbull	1,197 00	197 86	3,372 00	295 81	1,502 46	500 00	124 41	....
Tuscarawas	846 40	800 00	1,686 55	1,950 00	1,482 71	....	1,078 09	....
Union	1,165 95	1,245 58	1,281 57	51 80	4,725 32	....	....	....
Van Wert	1,547 25	1,765 10	5,724 90	118 00	2,722 40	914 46	585 14	....
Warren	859 65	550 68	2,877 75	....	1,790 66	....	16 36	250 00
Washington	475 00	1,294 98	2,422 95	216 78	2,690 64	475 00	....	....
Wayne	310 00	757 40	2,314 95	75 00	1,528 84	649 14	....	....
Williams	961 85	1,609 91	2,734 53	910 40	2,116 76	1,619 46	763 77	....
Wood	....	2,573 35	2,644 35	....	150 05	....	46 75	....
Wyandot	188 65	38 00	1,753 48	....	486 87	168 89	....	439 82
Total	$60,765 94	$102,478 68	$212,642 19	$79,028 01	$143,778 36	$17,911 95	$36,774 24	$7,117 31

Ohio State Fair and Industrial Exposition

COLUMBUS

August 29, 30, 31, and September 1 and 2

1904

The Ohio State Fair and Industrial Exposition of 1904 was held August 29, 30, 31 and September 1, 2. This Bulletin contains a complete list of the awards that were made in each of the several departments and classes where premiums were offered, and also a list of the exhibitors in the Machinery and Manufactural Departments where no premiums were offered or competition entered into.

The grounds and buildings were early prepared for receiving exhibits, and the rule was enforced requiring everything to be in place, ready for public inspection, on the morning of the opening day. Nearly all exhibits were put in position the week previous to the fair, and the program began promptly, Monday morning, August 29.

The exhibition throughout developed no weak or uninteresting places. All of the exposition buildings were well filled with fine and interesting displays, illustrating the department and classes to which the building was specially devoted. The latest inventions, the newest devices, the finest fabrics, the choicest of farm, garden, orchard and greenhouse productions, the beautiful in art and home ornamentation, and substantial furnishings and fittings were properly arranged in the several buildings, and judging from the crowds who thronged the buildings and lingered long in study and admiration, the information unfolded to the visiting public was easily grasped and greatly appreciated.

The buildings where live stock were housed and shown had many visitors and none were disappointed. The animals, herds, stables and flocks were gathered from the best in the land, and every important breed was represented. Thefarmer desiring to improve his farm stock had the evidence before him of how best to do it, and no doubt, from the influences of the live stock exhibit of the Ohio State Fair, untold good will result.

An exceedingly interesting department was that of agricultural implements and machinery. The buildings were filled with all kinds of cultivating and harvesting implements, and on open ground, the heavier classes of machines and engines were constantly demonstrating to an interesting public, the workings and merits of each machine.

Every department of the Fair was arranged and conducted with a view to furnishing illustrations of progress that should be of a strictly educational character, and while the management provided some wholesome free amusements for the entertainment of the people, the lines were strictly drawn on everything in the nature of so-called privilege exhibitions for which admission is charged, and on fakes of every character.

As a grand educational industrial exposition, the Ohio State Fair of 1904 was a decided success. By reason of the counter attraction at St. Louis, and rain on one of the days of the Fair, the attendance did not equal that of last year, but it was sufficient to cover all expenses of the Fair and leave a small balance for the care and maintenance of grounds and buildings until another exhibition.

With such fine grounds and such immense buildings as are required for Ohio's Fair, the cost of keeping them in prime condition is no little sum, and yet, notwithstanding the present building facilities, which were thought to be ample for years to come, the management is now facing the fact that additional buildings must be provided before another Fair is held, especially for the great manufacturing interests that have increased so rapidly in demanding exhibition space.

A large increase is required in machinery buildings and a new building for poultry is desired, and when these are provided there will not be a single department of the Fair but what will be at least comparatively equal in equipment and convenience for exhibition purposes.

The Ohio State Fair is under the direct management of the Ohio State Board of Agriculture, and each member is assigned to important duties. The several departments of the Fair of 1904 were in charge of the following members and officers of the Board, the members in charge of exhibition departments being assisted by the superintendents named.

In the administrative division of the Fair a great force of clerks and experts are required to conduct the business.

ADMINISTRATIVE.

General Headquarters—
J. L. CARPENTER, President........................Carpenter.

Financial Department—
T. L. CALVERT, Treasurer..........................Selma.

Executive Department—
W. W. MILLER, Secretary.........................Columbus.

Publicity and Promotion Department—
J. W. FLEMING, Ass't Secretary...................Columbus.

EXHIBITION.

MEMBERS IN CHARGE AND SUPERINTENDENTS.

First Department—Horses.

C. H. Ganson, Urbana, Member in Charge.
B. I. Jones, Granville, Superintendent.
A. T. Jones, Columbus, Assistant Superintendent.

Second Department—Cattle.

L. P. Bailey, Tacoma, Member in Charge.
H. A. Lamson, Van Wert, Superintendent.

Third Department—Sheep.

E. L. Lybarger, Spring Mountain, Member in Charge.
Uriah Cook, Lunda, Superintendent.

Fourth Department—Swine.

A. P. Sandles, Ottawa, Member in Charge.
Alf. Dunlap, Rushmore, Superintendent.

Fifth Department—Poultry.

A. P. Sandles, Ottawa, Member in Charge.
D. W. Light, Columbus Grove, Superintendent.

Sixth Department—Farm Products.

Wm. Miller, Gypsum, Member in Charge.
R. J. Tussing, Canal Winchester, Superintendent.

Seventh Department—Fruits.

Wm. Miller, Gypsum, Member in Charge.
F. H. Ballou, Newark, Superintendent.

Seventh Department—Plants and Flowers.

Wm. Miller, Gypsum, Member in Charge.
F. H. Ballou, Newark, Superintendent.

Eighth Department—Machinery and Implements.

R. O. Hinsdale, Wadsworth, Member in Charge.
P. G. Ewart, Krumroy, Superintendent.
Carl Williams, Columbus, Assistant Superintendent.

Ninth Department—Mechanics' and Manufacturers' Products.

T. E. Cromley, Ashville, Member in Charge.
S. D. Killian, Columbus, Superintendent.

Tenth Department—Merchandise, Music, Etc.

T. E. Cromley, Ashville, Member in Charge.
G. F. Ramsey, Columbus, Superintendent.

Eleventh Department—Woman's Work.

Sam'l Taylor, Grove City, Member in Charge.
Miss D. G. Cherry, Newark, Superintendent.
Mrs. N. T. Connell, Portsmouth, Assistant Superintedent.
W. K. Haughan, Grove City, Assistant Superintendent.

Twelfth Department—Fine Arts.

Sam'l Taylor, Grove City, Member in Charge.
Jos. H. Stone, Newark, Superintendent.
Mrs. Mary B. Madden, Wilmington, Assistant Superintendent.

The Ohio State Fair has made such large annual increase in its exhibition departments, to meet which, extensive equipment is required, and such a wide range of classification is necessary, in order to cover the exhibition demands of the farm, mechanical and industrial interests, that the Ohio Fair can no longer be classed with average state fairs, but must be considered among the greater industrial expositions and rated as such.

The Ohio State Fair and Industrial Exposition being permanent in character, all the building equipment is required to be of the most substantial and lasting material, with capacity sufficient for large displays and arranged with the conveniences necessary to the best effect in the exhibits. The many large buildings constructed within the past few years are models of completeness, and those now in course of erection will be equally good and appropriate for the purpose intended.

The annual exhibitions are for the sole purpose of enlightenment and education, and therefore the facilities for exhibition must be such as to attract the best exhibits in every line, that the most effective and lasting object lessons be placed before the people to result in advancing their professions and industries.

Respectfully submitted,

J. W. Fleming,
Ass't Secretary.

W. W. Miller,
Secretary.

LIST OF AWARDS
OHIO STATE FAIR, 1904.

FIRST DEPARTMENT—HORSES.

C. H. GANSON, Member in Charge.

ROADSTERS.

Name of Owner.	Postoffice..	Awards.	Amount
W. W. Ferguson	Delaware, O.	Best Stallion 4 Years or Over—Whitewood	$20 00
B. F. Parsell	Reynoldsburg, O.	2d Best Brown Wilkes	10 00
Seymour Smith	Pataskala,O.	3d Best Sunland Clay, Jr.	H. C.
W. L. McCurdy	Leonardsburg, O.	Best Stallion 3 Years and Under 4	20 00
Belmont Farm	Xenia, O.	2d Best Imperial Jay	10 00
Same	Xenia, O.	3d Best Jay Mac	H. C.
Chas. Fairchild	Pataskala, O.	Best Stallion 2 Years and Under 3—Marmaduke	15 00
Robert Purdem	Marysville, O.	Best Stallion 1 Year and under 2	15 00
G. W Heskitt & Son	Fulton, O.	2d Best Scoundrel	5 00
E. S. McClellan	Kennard, O.	3d Best	H. C.
G. W. Heskitt & Son	Fulton, O.	Best Stallion Colt Under 1 Year—Bart Jones	10 00
B. F. Parsell	Reynoldsburg, O.	2d Best Ralph Wilkes	5 00
M. Conway	Columbus, O.	Best Mare 4 Years and Over—Burzonia	20 00
Belmont Farm	Xenia, O.	2d Best Xenia Princess	10 00
D. M. Bell, Agt	Leonardsburg, O.	3d Best	H. C.
D. M. Bell, Agt	Leonardsburg, O.	Best Mare 3 Years and Under 4	15 00
G. W. Heskitt & Son	Fulton, O.	2d Best Lucy	5 00
B. F. Parsell	Reynoldsburg, O.	Best Mare 2 Years and Under 3—Minnie P.	15 00
E. S. McClellan	Kennard, O.	2d Best	5 00
B. F. Parsell	Reynoldsburg, O.	3d Best Ruby W.	H. C.
Seymour Smith	Pataskala, O.	Best Filly 1 Year and Under 2	10 00
Wm. Fisher	Camp Chase, O.	2d Best Bess	5 00
E. S. McClellan	Kennard, O.	3d Best	H. C.
C. B. Smith	Camp Chase, O.	Best Filly Colt Under 1 Year —Nellie	8 00
B. F. Parsell	Reynoldsburg, O.	2d Best Red Bird	4 00
C. A. Ferguson	Delaware, O.	3d Best Kate	H. C
G. W. Heskitt & Son	Fulton, O.	Best Get of Sire—Exist	20 00
B. F. Parsell	Reynoldsburg, O.	2d Best Brown Wilkes	10 00
E. S. McClellan	Kennard, O.	3d Best	H. C.
Seymour Smith	Pataskala, O.	Best Produce of Mare	15 00
B. F. Parsell	Reynoldsburg, O	2d Best Columbus Girl	8 00
G. W. Heskitt & Son	Fulton, O.	3d Best	H. C.

FRENCH AND GERMAN COACH.

Name of Owner.	Postoffice.	Awards.	Amount.
McLaughlin Bros	Columbus, O.	Best Stallion 4 years or Over —Quadruple	$20 00
Hartman Stock Farm	Columbus, O.	2d Best C. H. Warner	10 00
Same	Columbus, O.	3d Best Sindikus	H. C.
Same	Columbus, O.	Best Stallion 3 Years and Under 4—Atrens	20 00
Same	Columbus, O.	2d Best Renke	10 00
Same	Columbus, O.	3d Best Kalif	H. C.
Same	Columbus, O.	Best Stallion 2 Years and Under 3—Wacker	15 00
Same	Columbus	2d Best Flips	5 00
Same	Columbus, O.	3d Best Martello	H. C.
Same	Columbus, O.	Best Stallion 1 Year and Under 2—Arnulf	15 00
Same	Columbus, O.	Best Mare 4 Years or Over—Phillipine II	20 00
Same	Columbus, O.	Best Mare 3 Years and Under 4—Wunschmaid	15 00
Same	Columbus, O.	Best Mare 2 Years and Under 3—Antine	15 00
Same	Columbus, O.	2d Best Octavia	5 00
G. W. Heskitt & Son	Fulton, O.	3d Best	H. C.
Hartman Stock Farm	Columbus, O.	Best Filly 1 Year and Under 2—Aga	10 00
Frank Holt	Camp Chase, O.	Best Filly Colt Under 1 Year—Kathryn	8 00

FRENCH DRAFT AND BELGIAN.

Name of Owner.	Postoffice.	Awards.	Amount
Geo. W. Crawford	Newark, O.	Best Stallion 4 Years or Over—Corilan	$20 00
McLaughlin Bros.	Columbus, O.	2d Best Picart	10 00
Geo. W. Crawford	Newark, O.	3d Best Julius Caesar	H. C.
McLaughlin Bros.	Columbus, O.	Best Stallion 3 Years and Under 4—Bayus	20 00
Hartman Stock Farm	Columbus, O.	2d Best Mongolian	10 00
Geo. W. Crawford	Newark, O	Best Stallion 2 Years and Under 3—Groseon	15 00
Same	Newark, O.	2d Best Cognac	5 00
McLaughlin Bros.	Columbus, O.	3d Best Bayard	H. C.
Geo. W. Crawford	Newark, O.	Best Stallion 1 Year and Under 2—Dore A. Appleterre	15 00
McLaughlin Bros.	Columbus, O.	2d Best Doods	5 00
Geo. W. Crawford	Newark, O.	3d Best Polak	H. C.
W. W. Ferguson	Delaware, O.	Best Stallion Colt Under 1 Year	10 00
Same	Delaware, O.	2d Best	5 00
H. L. Domigan	Sunbury, O.	Best Mare 4 Years or Over. . Nellie	20 00
W. W. Ferguson	Delaware, O.	2d Best Rosa	10 00
Same	Delaware, O.	3d Best Daisy	H. C.
Same	Delaware, O.	Best Mare 3 Years and Under 4—Orlena	15 00
Same	Delaware, O.	Best Mare 2 Years and Under 3—Anna	15 00
H. L. Domigan	Sunbury, O.	2d Best Flora	5 00
Same	Sunbury, O.	Best Filly Colt Under 1 year—Bess	8 00
Geo. W. Crawford	Newark, O.	Best Get of Sire	20 00
McLaughlin Bros.	Columbus, O.	2d Best Get of Sire	10 00
W. W. Ferguson	Delaware, O.	Best Produce of Mare	15 00

PERCHERONS.

Name of Owner.	Postoffice.	Awards.	Amount.
Hartman Stock Farm	Columbus, O.	Best Stallion 4 Years or Over—Major	$20 00
Same	Columbus ,O.	2d Best Calculator	10 00
McLaughlin Bros.	Columbus, O.	3d Best Grandini	H. C.
McLaughlin Bros.	Columbus, O.	Best Stallion 3 Years and Under 4—Violon	20 00
Hartman Stock Farm	Columbus, O.	2d Best Tambour	10 00
Same	Columbus, O.	3d Best Mongolian	H. C.
Same	Columbus, O.	Best Stallion 2 Years and Under 3—Malgache	15 00
Same	Columbus, O.	2d Best Civil	5 00
Same	Columbus, O.	3d Best Keruces	H. C.
Same	Columbus, O.	Best Stallion 1 Year and Under 2— Edison	15 00
Geo. W. Crawford	Newark, O.	2d Best Lapin	5 00
McLaughlin Bros.	Columbus, O.	3d Best Turco	H. C.
Hartman Stock Farm	Columbus, O.	Best Mare 4 Years or Over— Vigoruse	20 00
Same	Columbus, O.	2d Best Linda	10 00
C M. Jones	Plain City, O.	3d Best Zelda	H. C.
Hartman Stock Farm	Columbus, O.	Best Mare 3 Years and Under 4—Edwantroude	15 00
Same	Columbus, O.	2d Best Muse	5 00
W. P. Whittier	Galena, O.	3d Best Topsey	H. C.
C. M. Jones	Plain City, O.	Best Mare 2 Years and Under 3—Rachael	15 00
Hartman Stock Farm	Columbus, O.	2d Best Petronitte	5 00
Same	Columbus, O.	3d Best Atedueline	H. C.
H. L. Domigan	Sunbury, O.	Best Filly Colt Under 1 Year—Gladys	8 00
Hartman Stock Farm	Columbus, O.	2d Best America	4 00
Geo. W. Crawford	Newark, O.	Best Get of Sire	20 00
Hartman Stock Farm	Columbus, O	Best Produce of Mare	15 00

CLYDESDALES AND SHIRES.

Name of Owner.	Postoffice.	Awards.	Amount.
L. J. Leonard	London, O.	Best Stallion Colt Under 1 Year—Ajax	$10 00
Same	London, O.	Best Mare 4 Years or over—Trojan Belle	20 00
Same	London, O.	2d Best Spratboro	10 00
Same	London, O.	Best Mare 2 Years and Under 3—Nailstone	15 00
Same	London, O.	Best Filly 1 Year and Under 2—Nailstone Maid	10 00
Same	London, O.	Best Get of Sire	20 00
Same	London, O.	Best Produce of Mare	15 00

GRADE DRAFT.

Name of Owner.	Postoffice	Awards.	Amount.
Wm. Stephens	Ashley, O.	Best Gelding or Mare 4 Years or Over—Charley	$10 00
J. M. Elliott	Hilliard, O.	2d Best....Bird	5 00
C. A. Ferguson	Delaware, O.	3d Best....Bay	H. C.
Same	Delaware. O.	Best Gelding or Mare 2 Years and Under 3	10 00
H. L. Domigan	Sunbury, O.	2d Best....Virgil	5 00
Same	Sunbury, O.	Best Gelding or Mare 1 Year and Under 2—Josey	10 00
Wm. Stephens	Ashley, O.	Best Matched Team	15 00
J. M. Elliott	Hilliard, O.	2d Best Matched Team	8 00

GENERAL PURPOSE.

Name of Owner.	Postoffice.	Awards.	Amount.
Walnut Run Stock Farm	London, O.	Best Gelding 4 Years or Over	$15 00
J. Green	Wash'ton C. H., O	2d Best	8 00
Walnut Run Stock Farm	London, O.	3d Best	H. C.
Clinton Miller	Galloway, O.	Best Gelding 2 Years and Under 3	10 00
Robert Purdem	Marysville, O.	Best Mare 4 Years or Over	15 00
Henry C. Geyer	Camp Chase, O.	2d Best	8 00
E. S. McClellan	Kennard, O.	3d Best	H. C.
Robert Purdem	Marysville, O.	Best Mare 3 Years and Under 4	15 00
J. L. Leonard	London, O.	Best Mare 2 Years and Under 3	10 00
G. W. Heskitt & Son	Fulton, O.	2d Best	5 00
E. L. McCollem	Columbus, O.	3d Best	H. C.

SADDLE HORSES.

Name of Owner.	Postoffice.	Awards.	Amount.
E. L. McCollem	Columbus, O.	Best Stallion 4 Years or Over	$20 00
Same	Columbus, O.	Best Mare 4 Years or Over	20 00
J. A. Wallace, Agt	Columbus, O.	2d Best....Ida Highwood	10 00
E. L. McCollem	Columbus, O.	3d Best	H. C.
E. L. McCollem	Columbus, O.	Best Gelding 4 Years or Over	20 00
J. A. Wallace, Agt	Columbus, O.	2d Best	10 00
E. L. McCollem	Columbus, O.	3d Best	H. C.
Same	Columbus, O.	Best Gelding Under 4 Years	15 00
Same	Columbus, O.	2d Best	8 00

COMBINED HARNESS AND SADDLE CLASS.

Name of Owner.	Postoffice.	Awards.	Amount.
E. L. McCollem	Columbus, O.	Best Stallion Any Age	$20 00
Same	Columbus, O.	Best Mare Any Age	20 00
J. A. Wallace, Agt	Columbus, O.	2d Best	10 00
E. L. McCollem	Columbus, O.	Best Gelding Any Age	20 00
H. E. Donovan	Columbus, O.	2d Best	10 00

HIGH SCHOOL CLASS.

Name of Owner.	Postoffice.	Awards.	Amount.
E. L. McCollem	Columbus, O.	Best Horse, Mare, or Gelding Any Age—Golden Gait, Jr.	$25 00
J. A. Wallace, Agt	Columbus, O.	2d Best....Ringmaster	15 00

MATCHED TEAMS AND SINGLE DRIVERS.

Name of Owner.	Postoffice.	Awards.	Amount.
Walnut Run Stock Farm	London, O.	Best Pair Matched Roadsters to Wagon or Buggy	$20 00
G. W. Heskitt & Son	Fulton, O.	2d Best	10 00
Robt. Purdem	Marysville, O.	3d Best	H. C.
M. Conway	Columbus, O.	Best Single Driver to Road Wagon or Buggy	10 00
E. L. McCollem	Columbus, O.	2d Best	5 00
Robt. Purdem	Marysville, O.	3d Best	H. C.
J. E. Green	Wash'ton C. H., O	Best Coach Team to Coach or Heavy Carriage	20 00
Walnut Run Stock Farm	London, O.	2d Best	10 00
Same	London, O.	3d Best	H. C.
J. E. Green	Wash'ton C.H.,O.	Best Single Coach Mare or Gelding to Appropriate Vehicle	10 00
Walnut Run Stock Farm	London, O.	2d Best	5 00
Same	London, O.	3d Best	H. C.
J. A. Wallace	Columbus, O.	Best Park Mare or Gelding to Appropriate Vehicle	10 00
Walnut Run Stock Farm	London, O.	2d Best	5 00
Robt. Purdem	Marysville, O.	3d Best	H. C.
Walnut Run Stock Farm	London, O.	Best Four-in-hand to Coach or Brake	20 00

UTILITY CLASS.

Name of Owner.	Postoffice.	Awards.	Amount.
Wm. Stephens	Ashley, O.	Best Double Team and Delivery or Transfer Wagon	Silver Cup

SHETLAND PONIES.

Name of Owner.	Postoffice.	Awards.	Amount.
J. A. Wallace, Agt	Columbus, O.	Best Stallion 3 Years or Over	$15 00
Cepter Gregg	Sunbury, O.	Best Stallion 1 Year and Under 2—Cobb	8 00
C. W. Watson	Columbus, O.	Best Stallion Colt Under 1 Year	5 00
Seymour Smith	Pataskala, O.	2d Best	3 00
Ceptor Gregg	Sunbury, O.	Best Mare 3 Years or Over. .Midget	15 00
J. D. Haynie	Columbus, O.	2d Best. Dollie	8 00
Ida May Matticks	Columbus, O.	3d Best Same. Nellie	H. C.
Ralph Loewer	Columbus, O.	Best Filly 1 Year and Under 2—Pet	8 00

IN HARNESS TO APPROPRIATE VEHICLE.

Name of Owner.	Postoffice.	Awards.	Amount.
J. D. Haynie	Columbus, O.	Best Single Turnout—Dollie	$10 00
Cobb Gavitt	Ashley	2d Best	5 00
L. J. Cox	Columbus, O.	3d Best. William	H. C.
Cobb Gavitt	Ashley, O.	Best Double Team Turnout	15 00
Same	Ashley, O.	Best Four-in-hand	15 00
Cepter Gregg	Sunbury, O.	Best Pony Under Saddle—Nellie	8 00
Cob Gavitt	Ashley, O.	2d Best	4 00
L. J. Cox	Columbus, O.	3d Best. William	H. C.

PONIES—OTHER THAN SHETLAND.

Name of Owner.	Postoffice.	Awards.	Amount.
L. J. Cox	Columbus, O.	Best Single Turnout —McKinley	$10 00
Cobb Gavitt	Ashley, O.	2d Best	5 00
C. M. Jones	Plain City, O.	3d Best. Tid	H. C.
Cobb Gavitt	Ashley, O.	Best Double Team Turnout	15 00
Same	Ashley, O.	Best Four-in-hand	15 00
L. J. Cox	Columbus, O.	Best Pony Under Saddle—McKinley	8 00
Cobb Gavitt	Ashley, O.	2d Best	4 00

SUMMARY OF THE RACES.

2:30 CLASS PACING—PURSE $400.

Entered By.	Name of Animal.	Heats.			
Frank Calhoun	Dupont	10	5	3	3
A. B. Grove	Baby Burns	5	7	7	8
Howard Edwards	Jolly Bird	1	8	5	5
J. W. H. Stalter	Alert, Jr.	8	4	8	10
Benjamin C. Yates	Thaddie Burns	2	3	4	4
Phil Wagner	Mountain Gem	7	6	10	7
J. P. Pletsch	Don N.	6	9	2	2
Homer West	Homer West	4	1	1	1
F. Dwyer	Count Burns	9	10	6	6
J. H. Swisher	Bessie Butler	3	2	9	9

Time—2:21¼, 2:21¼, 2:21½, 2:21½.

2:43 CLASS TROTTING—PURSE $300.

Entered By.	Name of Animal.	Heats.			
Chas. Nicol	Gerrold N.	10	6	11	9
F. M. Johnson	Demorest	2	3	2	3
Dr. Winn	The Rambler	5	8	6	8
E. W. Swisher	Little Bridget	4	2	4	2
C. W. Marks	Buck	6	7	8	6
W. A. Bacon	Bourbon Jay	1	5	5	5
J. S. Wiley	Radium	8	12	10	11
J. J. King	King Mount	12	10	9	10
A. R. Morgan	Annex Russia	9	1	1	1
Martin Conway	Burnsonia	11	11	12	12
G. A. & H. Groves	Angie G.	3	4	3	4
George Mitchell	Birdie M.	7	9	7	7

Time—2:27¼, 2:25¼, 2:25¼, 2:25¼

PONY RACE—Half Mile Dash in Harness—PURSE $35

Entered By.	Name of Animal.	Heats.
Ila May Matticks	Nellie	3
C. M. Jones	Tid	1
Cobb Gavitt	Kathryn C.	2

Time—1:58.

2:40 CLASS PACING—PURSE $300.

Entered By.	Name of Animal.	Heats.			
I. Middlesworth	Myrtle Chilhouse	2	dis.		
M. O. Stokes	Regina	4	1	1	1
O. Whitson	Opal Martin	5	4	5	dis
Tom Dwyer	Frank Hedrick	3	3	3	3
C. A. Valentine	Dr. L.	1	2	2	2
Amos McGriff	Katie Patchen	6	5	4	4

Time—2:21¼, 2:24¼, 2:21¼, 2:20½.

2:29 CLASS TROTTING—PURSE $400.

Entered By.	Name of Animal.	Heats.
John A. Hall	Frank T.	4 3 2 2
J. S. Karnes	Olean	3 4 4 3
L. A. Smith	Berty Clay	1 2 3 4
J. T. Deardoff	Chester Downs	2 1 1 1

Time—2:26¼, 2:25¼, 2:25¼, 2:26¾.

2:20 CLASS PACING—PURSE $400.

Entered By.	Name of Animal	Heats.
J. H. Swisher	Nellie Wright	10 8 7
Wm. N. Albin	John A.	6 4 4
John Branigan	Gold Bar	9 9 8
E. E. Smith	Hub Smith	2 5 2
H. E. Smith	Beaut Kennedy	1 1 1
Oak Lawn Farm	William B	8 10 dr
Joe Crist	Nellie J.	4 2 3
Wm. Multer	Uncle Bill	5 7 9
Phil Wagner	Electrifier	7 6 6
J. Cragel	Duey	3 3 5

Time—2:19¼, 2:19¼, 2:18¼.

2:25 CLASS PACING—PURSE $400.

Entered By.	Name of Animal.	Heats.
B. F. Yates	Thaddie Burns	3 5 5
Tom Dwyer	Goldie Wright	2 6 3
J. H. Wellwood	Minnie Fisk	2 3 2
F. M. Johnson	Jim O.	6 dis.
D. M. Simpson	Ginger B.	5 2 6
Oak Lawn Farm	Lilly Belle	7 4 4
Orchard Park Farm	Gaity	1 1 1

Time—2:17¼, 2:20, 2:15½.

2:37 CLASS TROTTING—PURSE $400.

Entered By.	Name of Animal.	Heats.
Chas. Nicol	Gerald N.	4 6 6 3 2
Hay & Miller	Legal Law	7 4 4 4 8
C. D. Trimner	Frank Wilton	5 5 7 7 7
Belmont Farm	Xenia Princess	6 7 5 6 3
O. F. Peddicord	Bessie E.	8 8 8 5 5
Abdallah Park	Jennevieve	2 2 3 8 6
J. S. Karns	Olean	3 1 1 2 4
W. A. Bacon	Bourbon Jay	1 3 2 1 1

Time—2:24¼, 2:26¼, 2:26¾, 2:25, 2:28.

2:15 CLASS PACING—PURSE $400.

Entered By.	Name of Animal,	Heats.
O. Whitson	Legal Hal	7 8 7 5
R. E. Bedford	Billy F.	3 5 13 8
John Laugel	Harry K.	2 6 9 9
G. W. Glover	Florence Nightingale	1 2 4 6
C. A. Valentine	Daisy V.	13 7 5 3
S. S. Ruble	Lady Alect	6 4 2 2
Orchard Park Farm	Ola Wilkes	11 12 8 10
Abdallah Park	High Seven	12 13 11 7
Dr. G. H. Geiger	Mollie M.	8 9 6 11
Hoffman & Jones	George Burns	4 3 3 dr
Clayton Bros	Lady C.	10 11 12 4
R. P. Liter	Lady Miller	5 1 1 1
W. B. Duffey	Lucky Jim	9 10 10 12

Time—2:15¼, 2:12¼, 2:13¼, 2:11¼.

2:24 CLASS TROTTING—PURSE $400.

Entered By.	Name of Animal.	Heats.
Cliff Todd	Cuprite	3 2 7 5 5
Wm. Multer	Harry Simmons	7 4 4 3 6
Chas. Cummings	Dr. Gray	1 3 1 2 2 1
Belmont Farm	Xenia Lady	5 7 5 6 4
Slyh & Evans	Electric Bow	4 6 6 7 dr
Cora Warline	Jessie Clay	6 5 2 1 1 3
Carl Price	George Storm	2 1 3 4 3 2

Time—2:32¼, 2:30, 2:31¼, 2:30, 2:28½, 2:24¾.

FREE-FOR-ALL PACING CLASS—PURSE $500.

Entered By.	Name of Animal.	Heats.
Thos. Dwyer	Little Frank	3 2 2
A. E. Van Atta	Nata B.	1 1 1
Ballard & Estes	Pinchem Wilkes	2 3 3

Time—2:27¼, 2:28½, 2.29.

2:19 CLASS TROTTING—PURSE $400.

Entered By.	Name of Animal.	Heats.
Harvey Close	Charley Atwood	5 dr.
C. W. Marks	Glenwood M.	2 4 1 2 5
J. W. Townsley	Winnie Wright	3 1 2 3 3
Joe Crist	Trelawney	6 5 5 4 4
J. B. Miller	Carrie Nation	1 2 3 1 1
L. B. Murphy	Mayline	8 6 dr.
C. A. Valentine	Walter Pierce	4 3 4 5 2
A. R. Morgan	Wano	7 7 6 6 dr

Time—2:27¼, 2:27¼, 2:24¼, 2:26¼, 2:29¼.

2:14 CLASS TROTTING—PURSE $400.

Entered By.	Name of Animal.	Heats.
Ballard & Estes	Victor	1
Jno. M. Girton	Aliped	6
Joe Crist	Trelawney	4
C. A. Valentine	Ben Potts	5
George C. Ray	Black Patchen	2
R. E. Bedford	Altonette	3

Time—2:24¾.

On account of a heavy rainstorm and by consent of all the parties starting in this race, purse was equally divided among six starters.

SECOND DEPARTMENT—CATTLE.

L. P. BAILEY, Member in Charge.

SHORTHORNS.

Name of Owner.	Postoffice.	Awards.	Amount.
G. M. Roudebush	Newtonsville, O.	Best Bull 3 Years or Over—Royal Stamp	$15 00
Jonas Dininger	Greenville, O.	2d Best IV Duke of Gloster	10 00
J. M. Williams & Son	Briant, Ind.	3d Best Butterfly King	5 00
C. Hintz & Son	Fremont, O.	Best Bull 2 Years and Under 3—Ben Loman	15 00
D. A. Teener	Cumberland, O.	2d Best Jack of Hearts	10 00
C. L. Gerlaugh	Osborn, O.	3d Best Russler	5 00
H. P. Fry	Bettsville, O.	Best Bull 1 Year and Under 2— Jubilee	10 00
G. M. Roudebush	Newtonsville, O.	2d Best Royal Raspberry Chief	5 00
C. L. Gerlangh	Osborn, O.	3d Best Silver Prince	3 00
C. Hintz & Son	Fremont, O.	Best Bull Under 1 Year—Scottish Pride	10 00
J. W. Williams & Son	Briant, Ind.	2d Best Golden Crown	5 00
C. Hintz & Son	Fremont, O.	3d Best Golden Prince	3 00
Same	Fremont, O.	Best Cow 3 Years or Over—Bridish Lady	15 00
Jonas Dininger	Greenville, O.	2d Best Melody	10 00
J. W. Williams & Son	Briant, Ind.	3d Best Alvington Maid III	5 00
Same	Briant, Ind.	Best Cow or Heifer 2 Years and Under 3— Florence	15 00
C. Hintz & Son	Fremont, O.	2d Best Mina of Oriel	10 00
H. P. Fry	Bettsville, O.	3d Best Orange Lily	5 00
C. L. Gerlaugh	Osborn, O.	Best Heifer 1 Year and Under 2—Mary Beauty II	10 00
J. W. Williams & Son	Briant, Ind.	2d Best Kirklevington III	5 00
Same	Briant, Ind.	3d Best Lady	3 00
C. L. Gerlaugh	Osborn, Ind.	Best Heifer Under 1 Year—Amaranth IV	10 00
Jonas Dininger	Greenville, O.	2d Best Bella's Red Lady	5 00
G. M. Roudebush	Newtonsville, O.	3d Best Cowslip	3 00
J. W. Williams & Son	Briant, Ind.	Best Exhibitor's Herd	30 00
C. Hintz & Son	Fremont, O.	2d Best	15 00
Jonas Dininger	Greenville, O.	3d Best	H. C.
J. W. Williams & Son	Briant, Ind.	Best Breeders Young Herd	30 00
C. L. Gerlaugh	Osborn, O.	2d Best	15 00
C. Hintz & Son	Fremont, O.	3d Best	H. C.
J. W. Williams & Son	Briant, Ind.	Best Get of Sire	20 00
G M. Roudebush	Newtonsville, O.	2d Best	10 00
H. P. Fry	Bettsville, O.	3d Best	H. C.
J. W. Williams & Son	Briant, Ind.	Best Produce of Cow	10 00
C. Hintz & Son	Fremont, O.	2d Best	5 00
C. L. Gerlaugh	Osborn, O.	3d Best	H. C.

HEREFORDS.

Name of Owner.	Postoffice.	Awards.	Amount.
W. H. Curtice	Eminence, Ky.	Best Bull 3 Years or Over—Beau Donald 39	$15 00
A. C. Huxley	Bunker Hill, Ind.	2d Best Beau Donald 33	10 00
W. Kirby	Kokomo, Ind.	3d Best Actor	5 00
W. H. Curtice	Eminence, Ky.	Best Bull 2 Years and Under 3—Prince Rupert VIII	15 00
J. B. Fernow	Leesburg, O.	2d Best Arlington's Picture	10 00
Herron & Wickins	Chandlersville, O.	3d Best Lord Wellington	5 00
A. C. Huxley	Bunker Hill, Ind.	Best Bull 1 Year and Under 2—Beau Wilton	10 00
W. H. Curtice	Eminence, Ky.	2d Best Beau Donald 58	5 00
Same	Eminence, Ky.	3d Best Beau Donald 66	3 00
A. C. Huxley	Bunker Hill, Ind.	Best Bull Under 1 Year—Perfection Fairfax	10 00
W. H. Curtice	Eminence, Ky.	2d Best Beau Donald 75	5 00
Herron & Wickins	Chandlersville, O.	3d Best Kodak	3 00
W. H. Curtice	Eminence, Ky.	Best Cow 3 Years or Over—Belle Donald 44	15 00
A. C. Huxley	Bunker Hill, Ind.	2d Best Keep on Duchess	10 00
W. H. Curtice	Eminence, Ky.	3d Best Belle Donald 59	5 00
A. C. Huxley	Bunker Hill, Ind.	Best Cow or Heifer 2 Years and Under 3— Miss Georgia Wilton	15 00
W. H. Curtice	Eminence, Ky.	2d Best Belle Donald 61	10 00
Wm. Kirby	Kokomo, Ind.	3d Best Lady May	5 00
W. H. Curtice	Eminence, Ky.	Best Heifer 1 Year and Under 2—Belle Donald 77	10 00
Same	Eminence, Ky.	2d Best Belle Donald 76	5 00
A. C. Huxley	Bunker Hill, Ind.	3d Best Miss Lydia Donald	3 00
W. H. Curtice	Eminence, Ky.	Best Heifer Under 1 Year—Belle Donald 86	10 00
A. C. Huxley	Bunker Hill, Ind.	2d Best Susie Donald	5 00

HEREFORDS—Concluded.

Name of Owner.	Postoffice.	Awards.	Amount.
A. C. Huxley	Bunker Hill, Ind.	3d Best Heifer under 1 year—Lena Donald	$ 3 00
W. H. Curtice	Eminence, Ky.	Best Exhibitor's Herd	30 00
Same	Eminence, Ky.	2d Best	15 00
A. C. Huxley	Bunker Hill, Ind.	3d Best	H. C.
Same	Bunker Hill, Ind.	Best Breeder's Young Herd	30 00
W. H. Curtice	Eminence, Ky.	2d Best	15 00
Same	Eminence, Ky.	Best Get of Sire	20 00
A. C. Huxley	Bunker Hill, Ind.	2d Best	10 00
W. H. Curtice	Eminence, Ky.	Best Produce of Cow	10 00
A. C. Huxley	Bunker Hill, Ind.	2d Best	5 00
W. H. Curtice	Eminence, Ky.	3d Best	H. C.

DEVONS.

Name of Owner.	Postoffice.	Awards.	Amount.
U. B. Moyer	Mt. Cory, O.	Best Bull 3 Years or Over—Ben's Choice	$15 00
Same	Mt. Cory, O.	2d Best.......Royal	10 00
Same	Mt. Cory, O.	Best Bull 1 Year and Under 2—Lookout	10 00
Same	Mt. Cory, O.	2d Best.......Gay Lad	5 00
Same	Mt. Cory, O.	3d Best.......Charming Lad	3 00
Same	Mt. Cory, O.	Best Bull Under 1 Year—Jimmie Butler	10 00
Same	Mt. Cory, O.	2d Best.......Square Trade	5 00
Same	Mt. Cory, O.	Best Cow 3 Years or Over—Pride	15 00
Same	Mt. Cory, O.	2d Best.......Bright Promise	10 00
Same	Mt. Cory, O.	3d Best.......Babe	5 00
Same	Mt. Cory, O.	Best Cow or Heifer 2 Years and Under 3—Picture of Woodland 13	15 00
Same	Mt. Cory, O.	2d Best Heifer 1 Year and Under 2—Maud	5 00
Same	Mt. Cory, O.	Best Heifer Under 1 Year—Tulip	10 00
Same	Mt. Cory, O.	2d Best.......Pansy	5 00
Same	Mt. Cory, O.	Best Exhibitor's Herd	30 00
Same	Mt. Cory, O.	Best Get of Sire	20 00
Same	Mt. Cory, O.	Best Produce of Cow	10 00
Same	Mt. Cory, O.	2d Best	5 00

ABERDEEN ANGUS.

Name of Owner.	Postoffice.	Awards.	Amount.
H. M. Brown	Hillsboro, O.	Best Bull 3 Years or Over—Enterprise of Adrie	$15 00
D. Bradfute & Son	Cedarville, O.	2d Best.......Lucy's Prince	10 00
Otto G. Callahan	Helena, Ky.	3d Best.......Lord Fretful	5 00
Wilmer N. Foster	Attica, Ind.	4th Best.......Kentucky Prince	......
D. Bradfute & Son	Cedarville, O.	Best Bull 2 Years and Under 3—Bonaparte Duke	15 00
Henry Weissenger & Son	Shelbyville, Ky.	2d Best.......Woodlawn Admiral	10 00
Wilmer N. Foster	Attica, Ind	3d Best.......Rosa Croix's Hunter	5 00
H. M. Brown	Hillsboro, O.	Best Bull 1 Year and Under 2—King of the Rovers	10 00
D. Bradfute & Son	Cedarville, O.	2d Best.......Gay Lad M	5 00
H. M. Brown	Hillsboro, O	3d Best.......Jim Delany	3 00
Henry Weissinger & Son	Shelbyville, Ky.	4th Best.......Barbara's Ito	......
Otto G. Callahan	Helena, Ky.	5th Best.......Early Hill Catchy	......
Magruder & Co.	Xenia, O.	6th.......Xenia Advance II	......
D. Bradfute & Son	Cedarville, O.	Best Bull Under 1 Year—Louis of Meadowbrook	10 00
Otto G. Callahan	Helena, Ky	2d Best.......Magic	5 00
Same	Helena, Ky	3d Best.......Judge	3 00
Wilmer N. Foster	Attica, Ind.	4th Best.......Jimmie Me Boy	......
Otto G. Callahan	Helena, Ky	5th Best.......Early Hill Noble	......
D. Bradfute & Son	Cedarville, O.	6th Best.......Lester of Meadowbrook	......
Same	Cedarville, O.	Best Cow 3 Years or Over—Queenly of Greenview	15 00
H. M. Brown	Hillsboro, O.	2d Best.......Maple of Minmore	10 00
Wilmer N. Foster	Attica, Ind.	3d Best.......Highschool	5 00
Otto G. Callahan	Helena, Ky	4th Best.......Queen	......
D. Bradfute & Son	Cedarville, O.	5th Best.......Lady D. of Meadowbrook	......
H. M. Brown	Hillsboro, O.	6th Best.......Aggie C.	......
Same	Hillsboro, O.	Best Cow or Heifer 2 Years and Under 3—Her Majesty of Cullen	15 00
Same	Hillsboro, O.	2d Best.......Kate of Highland Co.	10 00

ABERDEEN ANGUS—Concluded.

Name of Owner.	Postoffice.	Awards.	Amount.
D. Bradfute & Son	Cedarville, O.	3d Best Cow or Heifer 2 years and under 3—Broadies Heather	$ 5 00
Otto G. Callahan	Helena, Ky.	4th Best.....Early Hill Onward	......
Same	Helena, Ky.	5th Best.....Pride of Aberdeen 71	......
Wilmer N. Foster	Attica, Ind.	6th Best.....Shawnee Mina	......
D. Bradfute & Son	Cedarville, O.	Best Heifer 1 Year and Under 2—Lucia of Meadowbrook	10 00
Otto G. Callahan	Helena, Ky.	2d Best.....Early Hill Ontop	5 00
Magruder & Co.	Xenia, O.	3d Best.....Trylla	3 00
Wilmer N. Foster	Attica, Ind.	4th Best.....Shawnee Belle	......
H. M. Brown	Hillsboro, O.	5th Best.....Miss Belle of Highland Co.	......
D. Bradfute & Son	Cedarville, O.	6th Best.....Blanch IV of Meadowb'k.	......
Otto G. Callahan	Helena, Ky.	Best Heifer Under 1 Year—Fancy II	10 00
D. Bradfute & Son	Cedarville, O.	2d Best.....Winnie of Meadowbrook	5 00
Same	Cedarville, O.	3d Best.....Twill of Meadowbrook	3 00
Otto G. Callahan	Helena, Ky.	4th Best.....Queen II	......
Wilmer N. Foster	Attica, Ind.	5th Best.....My Lassie	......
H. M. Brown	Hillsboro, O.	6th Best.....Bara of Highland Co.	......
Same	Hillsboro, O.	Best Exhibitor's Herd	30 00
D. Bradfute & Son	Cedarville, O.	2d Best Exhibitor's Herd	15 00
Otto G. Callahan	Helena, Ky.	3d Best	H. C.
D. Bradfute & Son	Cedarville, O.	Best Breeder's Young Herd	30 00
Otto G. Callahan	Helena, Ky.	2d Best	15 00
H. M. Brown	Hillsboro, O.	3d Best	H. C.
D. Bradfute & Son	Cedarville, O.	Best Get of Sire	20 00
Otto G. Callahan	Helena, Ky.	2d Best	10 00
Same	Helena, Ky.	3d Best	H. C.
D. Bradfute & Son	Cedarville, O.	Best Produce of Cow	10 00
Otto G. Callahan	Helena, Ky.	2d Best	5 00
D. Bradfute & Son	Cedarville, O.	3d Best	H. C.

NOTE—4th, 5th and 6th awards were marked by Judges to distribute amounts offered by the Am. Aberdeen Angus Breeders Association.

POLLED DURHAMS.

Name of Owner.	Postoffice.	Awards.	Amount.
A. C. Wood & Son	Pendleton, Ind.	Best Bull 3 Years or Over—Golden Hero	$25 00
Oscar Hadley	Plainfield, Ind.	2d Best.....Field Marshal	15 00
Fletcher S. Hines	Malott Park, Ind.	3d Best.....Tippecanoe 44	10 00
J. H. Martz	Greenville, O.	Best Bull 2 Years and Under 3—Tippecanoe 64	25 00
A. C. Wood & Son	Pendleton, Ind.	2d Best.....Scottish Hero	15 00
Pollock & Kerr	Cedarville, O.	3d Best.....My Choice	10 00
Fletcher S. Hines	Malott Park, Ind.	Best Bull 1 Year and Under 2—Windermerl Tip	15 00
Oscar Hadley	Plainfield, Ind.	2d Best.....Buttonwood Marshal VI	10 00
A. C. Wood & Son	Pendleton, Ind.	3d Best.....Scottish Hero II	5 00
Oscar Hadley	Plainfield, Ind.	Best Bull Under 1 Year—Buttonwood Marshal VIII.	15 00
J. H. Martz	Greenville, O.	2d Best.....Widdleton VI	10 00
George E. McKaig & Son	Troy, O.	3d Best.....Prince of Riverside VIII	5 00
Fletcher S. Hines	Malott Park, Ind.	Best Cow 3 Years or Over—Ruby of Buttonwood	25 00
Same	Malott Park, Ind.	2d Best.....Ruby of Buttonwood II	15 00
W. Tossey & Son	Marysville, O.	3d Best.....Polled Iona	10 00
A. C. Wood & Son	Pendleton, Ind.	Best Cow or Heifer 2 Years and Under 3—Emily Craggs II	25 00
Wm. Tossey & Son	Marysville, O.	2d Best.....Lilac	15 00
Same	Marysville, O.	3d Best.....Fannie	10 00
A. C. Wood & Sons	Pendleton, Ind.	Best Heifer 1 Year and Under 2—Pride's Princess	15 00
J. H. Martz	Greenville, O.	2d Best.....Only Chance	10 00
Oscar Hadley	Plainfield, Ind.	3d Best.....Buttonwood Bonnie	5 00
Same	Plainfield, Ind.	Best Heifer Under 1 Year – Buttonwood Jennie Lind	15 00
J. H. Martz	Greenville, O.	2d Best.....Roan Mary	10 00
Fletcher S. Hines	Malott Park, Ind.	3d Best.....Arcadia Phyllis	5 00
A. C. Wood & Sons	Pendleton, Ind.	Best Exhibitor's Herd	40 00
Fletcher S. Hines	Malott Park, Ind.	2d Best	25 00
J. H. Martz	Greenville, O.	3d Best	H. C.
A. C. Wood & Sons	Pendleton, Ind.	Best Breeder's Young Herd	40 00
Oscar Hadley	Plainfield, Ind.	2d Best	20 00
Fletcher S. Hines	Malott Park, Ind.	3d Best	H. C.
Oscar Hadley	Plainfield, Ind.	Best Get of Sire	30 00
A. C. Wood & Sons	Pendleton, Ind.	2d Best	20 00
Fletcher S. Hines	Malott Park, Ind.	3d Best	H. C.
A. C. Wood & Sons	Pendleton, Ind.	Best Produce of Cow	20 00
Same	Pendleton, Ind.	2d Best	12 00
Fletcher S. Hines	Malott Park, Ind.	3d Best	H. C.

RED POLLS.

Name of Owner.	Postoffice.	Awards.	Amount.
Andrew Bros	Cedarville, O	Best Bull 3 Years or Over – Demon	$15 00
Frank H. Hawley	Leroy, O	2d Best... Eclipse	10 00
Same	Leroy, O	3d Best... Nash	5 00
Andrew Bros	Cedarville, O	Best Bull 2 Years and Under 3—King Henry	15 00
Same	Cedarville, O. O	Best Bull 1 Year and Under 2— Money Maker	10 00
Frank H. Hawley	Leroy, O	2d Best... Balzac	5 00
Andrew Bros	Cedarville, O	3d Best... Nonine	3 00
Same	Cedarville, O	Best Bull Under 1 Year—Gov. Herrick	10 00
Same	Cedarville, O	2d Best... Buffalo Bill	5 00
Frank H. Hawley	Leroy, O	3d Best... Universal	3 00
Andrew Bros	Cedarville, O	Best Cow 3 Years or Over.. Cherry	15 00
Frank H. Hawley	Leroy, O	2d Best... Aurelia	10 00
Andrew Bros	Cedarville, O	3d Best... Ina	5 00
Same	Cedarville, O	Best Cow or Heifer 2 Years and Under 3—Dumps II	15 00
Frank H. Hawley	Leroy, O	2d Best... Jessie	10 00
Same	Leroy, O	3d Best... Carrie	5 00
Andrew Bros	Cedarville, O	Best Heifer 1 Year and under 2—Golden Rod	10 00
Frank H. Hawley	Leroy, O	2d Best... Lottie	5 00
Andrew Bros	Cedarville, O	3d Best... Aurelia	3 00
Same	Cedarville, O	Best Heifer Under 1 Year—Nest Egg	10 00
Same	Cedarville, O	2d Best... Nora	5 00
Frank H. Hawley	Leroy, O	3d Best... Lavona	3 00
Andrew Bros	Cedarville O	Best Exhibitor's Herd	30 00
Frank H. Hawley	Leroy, O	2d Best	15 00
Andrew Bros	Cedarville, O	3d Best	H. C.
Same	Cedarville, O	Best Breeder's Young Herd	30 00
Frank H. Hawley	Leroy, O	2d Best	15 00
Andrew Bros	Cedarville, O	Best Get of Sire	20 00
Frank H. Hawley	Leroy, O	2d Best	10 00
Andrew Bros	Cedarville, O	3d Best	H. C.
Same	Cedarville O	Best Produce of Cow	10 00
Frank H. Hawley	Leroy, O	2d Best	5 00
Andrew Bros	Cedarville O	3d Best	H. C.

HOLSTEINS.

Name of Owner.	Postoffice.	Awards.	Amount.
W. B. Smith & Son	Columbus, O	Best Bull 3 Years or Over Rosa Bonheur V Colantha Lad	$15 00
F. G. Johnston	Columbus, O	2d Best–Prince Lelia De Kol	10 00
W. B. Smith & Son	Columbus, O	Best Bull Under 1 Year and Under 2—. Johanna De Colantha Lad	10 00
F. W. Shafer	Columbus, O	2d Best–Vita Vic's Victor	5 00
F. G. Johnston & Co	Columbus, O	Best Bull Under 1 Year—Elgin Belle 5 Prince	10 00
W. B. Smith & Son	Columbus, O	2d Best... Arrimond	5 00
Same	Columbus, O	3d Best... Ideal DeKol	3 00
Same	Columbus, O	Best Cow 3 Years or Over—Sallie Devrier	15 00
F. G. Johnston & Co	Columbus, O	2d Best... Orrice Wayne Swenoda	10 00
W. B. Smith & Son	Columbus, O	3d Best... Kola Countess	5 00
Same	Columbus, O	Best Cow or Heifer 2 Years and Under 3—We Said	15 00
Same	Columbus, O	2d Best... Miss Sharp II	10 00
F. G. Johnston & Co	Columbus, O	Best Heifer 1 Year and Under 2—Ruby Belle Bonheur.	10 00
Same	Columbus, O	2d Best... Orrice Wayne Swenoda Aaggie	5 00
W. B. Smith & Son	Columbus, O	3d Best... Very Popular.	3 00
F. G. Johnston & Co	Columbus, O	Best Heifer Under 1 Year—Margarette Bonheur.	10 00
Same	Columbus, O	2d Best... Ruby Belle, Rosa Bonheur	5 00
W. B. Smith & Son	Columbus, O	3d Best... Viola De Kol	3 00
Same	Columbus, O	Best Exhibitor's Herd	30 00
F. G. Johnston & Co	Columbus, O	Best Breeder's Young Herd	30 00
W. B. Smith & Son	Columbus, O	2d Best	15 00
F. G. Johnston & Co	Columbus, O	Best Get of Sire	20 00
W. B. Smith & Son	Columbus, O	2d Best	10 00
F. G. Johnston & Co	Columbus, O	Best Produce of Cow	10 00
W. B. Smith & Son	Columbus, O	2d Best	5 00

DUTCH BELTED.

Name of Owner.	Postoffice.	Awards.	Amount.
J. W. Swab	Findlay, O.	Best Bull 3 Years or Over—David Harum	$15 00
Frank R. Sanders	Bristol, N. H.	2d Best ... Sutton	10 00
Same	Bristol, N. H.	Best Bull 2 Years and Under 3—David II	15 00
J. W. Swab	Findlay, O.	Best Bull 1 Year and Under 2—Anton	10 00
Frank R. Sanders	Bristol, N. H.	2d Best ... Duke of Laconia	5 00
Same	Bristol N. H.	Best Bull Under 1 Year—Highland King	10 00
J. W. Swab	Findlay, O.	2d Best ... Newcomer	5 00
Same	Findlay, O.	Best Cow 3 Years or Over—Gladie	15 00
Frank R. Sanders	Bristol, N. H.	2d Best ... Echo II	10 00
J. W. Swab	Findlay, O.	3d Best ... Morning Glory	5 00
Same	Findlay, O.	Best Cow or Heifer 2 Years and Under 3—Fannie B.	15 00
Frank R. Sanders	Bristol, N. H.	2d Best ... Sophia's Pride	10 00
Same	Bristol, N. H.	3d Best ... Flossy W.	5 00
J. W. Swab	Findlay, O.	Best Heifer 1 Year and Under 2—Bessie S.	10 00
Frank R. Sanders	Bristol, N. H.	2d Best ... Maid's Buttercup	5 00
J. W. Swab	Findlay, O.	3d Best ... Hazel S.	3 00
Same	Findlay, O.	Best Heifer Under 1 Year... Bright Promise	10 00
Frank R. Sanders	Bristol, N. H.	2d Best ... Silver Sheen	5 00
J. W. Swab	Findlay, O.	3d Best ... Nora Grace	3 00
Same	Findlay, O.	Best Exhibitor's Herd	30 00
Frank R. Sanders	Bristol, N. H.	2d Best	15 00
J. W. Swab	Findlay, O.	Best Breeder's Young Herd	30 00
Frank R. Sanders	Bristol, N. H.	2d Best	15 00

BROWN SWISS

Name of Owner.	Postoffice.	Awards.	Amount.
McLaurey Bros. & Freemyer	Portlandville, N.Y	Best Bull 3 Years or Over—H. C. Burgi	$15 00
Hull Bros	Perry, O.	2d Best ... The Kid	10 00
McLaurey Bros. & Freemyer	Portland'le, N. Y.	Best Bull 2 Years and Under 3—Royal's Royal	15 00
Hull Bros	Perry, O.	2d Best ... Great Scott	10 00
McLaurey Bros. & Freemyer	Portland'le, N. Y.	Best Bull 1 Year and Under 2—Luob	5 00
Hull Bros	Perry, O.	2d Best ... John H.	5 00
Same	Perry, O.	3d Best ... Pedro H. L. IV	3 00
McLaurey Bros. & Freemyer	Portland'le, N. Y.	Best Bull Under 1 Year—Swiss King of R. M.	10 00
Same	Portland'le, N. Y.	2d Best ... Hector	5 00
Hull Bros	Perry, O.	3d Best ... Donald Scott	3 00
McLaurey Bros. & Freemyer	Portland'le, N. Y.	Best Cow 3 Years or Over—Octa	15 00
Hull Bros	Perry, O.	2d Best ... Bethlehem	10 00
McLaurey Bros. & Freemeyer	Portland'le, N, Y.	3d Best ... Bella Imported	5 00
Same	Portland'le N. Y.	Best Cow or Heifer 2 Years and Under 3—Duke's Ida F.	15 00
Hull Bros	Perry, O.	2d Best ... Perry Maid	10 00
McLaurey Bros. & Freemeyer	Portland'le, N. Y.	3d Best ... Duke's Cothilda	5 00
Same	Portland'le, N. Y.	Best Heifer 1 Year and Under 2—Khunic of R. M.	10 00
Hull Bros	Perry, O.	2d Best ... Valley Girl	5 00
McLaurey Bros. & Freemeyer	Portland'le, N. Y.	3d Best ... Weiblich	3 00
Same	Portland'le, N. Y.	Best Heifer Under 1 Year—Khunic II of R. M. II.	10 00
Same	Portland'le, N. Y.	2d Best ... Alpine Lassie	5 00
Hull Bros	Perry, O.	3d Best ... Alice H.	3 00
McLaurey Bros. & Freemeyer	Portland'le, N. Y.	Best Exhibitor's Herd	30 00
Hull Bros	Perry, O.	2d Best	15 00
McLaurey Bros. & Freemyer	Portland'le, N.Y.	Best Breeder's Young Herd	30 00
Hull Bros	Perry, O.	2d Best	15 00

JERSEYS.

Name of Owner.	Postoffice.	Awards.	Amount.
McLaurey Bros	Portland'le, N. Y.	Best Bull 3 Years or Over—Susie's Gold Son	$15 00
P. A. Pugh & Sons	N. Cum'land, W.V	2d Best ... King Downie	10 00
McLaurey Bros	Portland'le, N. Y.	3d Best ... Burnside Comatrio	5 00
Same	Portland'le, N. Y.	Best Bull 2 Years and Under 3—Flying Foxey's Rex	15 00
Same	Portland'le, N. Y.	2d Best ... Forfuturis Brown K.	10 00
Jos. W. Scott	Florence, Ky.	3d Best ... Tony's Clotaires	5 00
McLaurey Bros	Portland'le, N. Y.	Best Bull 1 Year and Under 2—Galloway	10 00
P. A. Pugh & Sons	N. Cu'land, W.Va.	2d Best ... Harry of Gas Valley	5 00
Lewis Dininger & Son	Greenville, O.	3d Best ... Lilly Holma's King	3 00
Jos. W. Scott	Florence, Ky.	Best Bull Under 1 Year	10 00
W. H. O. Goist	Girard, O.	2d Best	5 00

JERSEYS—Concluded.

Name of Owner.	Postoffice.	Awards.	Amount.
P. A. Pugh & Sons	N. Cu'land, W.Va.	3d Best Bull Under 1 Year	$ 3 00
McLaurey Bros	Portland'le, N. Y.	Best Cow 3 Years or Over—St. Clara	15 00
Jos. W. Scott	Florence, Ky.	2d Best ... Beautiful Gem	10 00
F. F. Marston	Bay City, Mich.	3d Best ... Partia Altama	5 00
McLaurey Bros	Portland'le, N. Y.	Best Cow or Heifer 2 Years and Under 3— Faith Cooper	15 00
Same	Portland'le N. Y.	2d Best ... Eminent II Fauvette	10 00
F. F. Marston	Bay City, Mich.	3d Best ... Virginia L. Altama	5 00
McLaurey Bros	Portland'le, N. Y.	Best Heifer 1 Year and Under 2—Beau's Marietta	10 00
P. A. Pugh & Sons	N. Cu'land, W.V.	2d Best ... Pink of Gas Valley	5 00
Jos. W. Scott	Florence, Ky.	3d Best ... Exile's Queen Esther.	3 00
McLaurey Bros	Portland'le, N. Y.	Best Heifer Under 1 Year—Beau's Susie	10 00
Same	Portland'le, N. Y.	2d Best ... Beau's Pogis of R. M.	5 00
J. M. Hodson	Montpelier, O.	3d Best	3 00
McLaurey Bros	Portland'le, N. Y.	Best Exhibitors' Herd	30 00
P. A. Pugh & Sons	N. Cu'land, W. V.	2d Best	15 00
Jos. W. Scott	Florence, Ky.	3d Best	H. C.
McLaurey Bros	Portland'le, N. Y.	Best Breeders' Young Herd	30 00
P. A. Pugh & Sons	N. Cu'land, W.Va.	2d Best	15 00
F. F. Marston	Bay City, Mich.	3d Best	H. C.
McLaurey Bros	Portland'le, N. Y.	Best Get of Sire	20 00
P. A. Pugh & Sons	N. Cu'land, W.Va.	2d Best	10 00
F. F. Marston	Bay City, Mich.	3d Best	H. C.
McLaurey Bros	Portland'le, N. Y.	Best Produce of Cow	10 00
P. A. Pugh & Sons	N. Cu'land, W.Va.	2d Best	5 00
Lewis Dininger	Greenville, O.	3d Best	H. C.

GUERNSEYS.

Name of Owner.	Postoffice.	Awards.	Amount.
L. V. Axtell	Perry, O.	Best Bull 3 Years or Over— Tully of Homestead	$15 00
R. C. & W. D. Phelps	Westerville, O.	2d Best ... Blendon Lad	10 00
L. V. Axtell	Perry, O.	3d Best ... Homestead Golden Duke	5 00
Same	Perry, O.	Best Bull 2 Years and Under 3—Superior of Homestead	15 00
Same	Perry, O.	Best Bull 1 Year and Under 2— Sleek of Homestead	10 00
R. C. & W. D. Phelps	Westerville, O.	3d Best ... Glenkula	3 00
L. V. Axtell	Perry, O.	Best Bull Under 1 Year— St. Louis of Homestead	10 00
Same	Perry, O.	2d Best ... Turk of Homestead	5 00
R. C. & W. D. Phelps	Westerville, O.	3d Best ... Mac's Pride	3 00
L. V. Axtell	Perry, O.	Best Cow 3 Years or Over—Golden Annie	15 00
R. C. & W. D. Phelps	Westerville, O.	2d Best ... Dora's Mildred II	10 00
L. V. Axtell	Perry O.	3d Best ... Elf of Woodburn	5 00
Same	Perry, O.	Best Cow or Heifer 2 Years and Under 3— Cora Lagrand	15 00
R. C. & W. D. Phelps	Westerville, O.	2d Best ... Princess Fay II	10 00
L. V. Axtell	Perry, O.	3d Best ... Elf of Homestead	5 00
Same	Perry, O.	Best Heifer 1 Year and Under 2—Viola of Homestead.	10 00
Same	Perry, O.	2d Best ... Marion of Homestead	5 00
R. C. & W. D. Phelps	Westerville, O.	3d Best ... Phoebe's Nan	3 00
L. V. Axtell	Perry, O.	Best Heifer Under 1 Year—Josephine of Homestead	10 00
R. C. & W. D. Phelps	Westerville, O.	2d Best ... Cosette	5 00
L. V. Axtell	Perry, O.	3d Best ... Magdaline of Homestead	3 00
Same	Perry, O.	Best Exhibitor's Herd	30 00
Same	Perry, O.	2d Best	15 00
R. C. & W. D. Phelps	Westerville, O.	3d Best	H. C.
L. V. Axtell	Perry, O.	Best Breeder's Young Herd	30 00
Same	Perry, O.	Best Get of Sire	20 00
Same	Perry, O.	Best Produce of Cow	10 00
Same	Perry, O.	2d Best	5 00

AYRESHIRES.

Name of Owner.	Postoffice.	Awards.	Amount.
Howard Cook	Beloit, O.	Best Bull 3 Years or Over—Donovan of St. Ann's	$15 00
E. J. Fletcher	Greenfield, N. H.	2d Best ... Drew's Best	10 00
Wm. Lindsay & Son	Plainfield, N. J.	3d Best ... Major Netherwood	5 00
Same	Plainfield, N. J.	Best Bull 2 Years and Under 3—Lucinda's Boy	15 00

AYRESHIRES—Concluded.

Name of Owner.	Postoffice.	Awards.	Amount.
Howard Cook	Beloit, O.	2d Best Bull 2 Yrs and Under 3—Salem Lad	$10 00
E. J. Fletcher	Greenfield, N, H.	3d Best Silver King of Greenfield	5 00
Howard Cook	Beloit, O.	Best Bull 1 Year and Under 2 — Monarch of St. Ann's.	10 00
Wm. Lindsay & Son	Plainfield, N. J.	2d Best Mountain Boy	5 00
E. J. Fletcher	Greenfield, H. N.	3d Best White King	3 00
Same	Greenfield, N. H.	Best Bull Under 1 Year—Smiler	10 00
Howard Cook	Beloit, O.	2d Best Donald Boy	5 00
Wm. Lindsay & Son	Plainfield, N. J.	3d Best Kitty's Lad	3 00
Howard Cook	Beloit, O.	Best Cow 3 Years or Over —Inez Douglas	15 00
E. J. Fletcher	Greenfield, N. H.	2d Best Durwood	10 00
Wm. Lindsay & Son	Plainfield, N. J.	3d Best Kitty Netherwood	5 00
E. J. Fletcher & Son	Greenfield. N. H.	Best Cow or Heifer 2 Years and Under 3—Rose Mona	15 00
Howard Cook	Beloit, O.	2d Best Diamond Douglas	10 00
Wm. Lindsay & Son	Plainfield, N. J.	3d Best Netherwood Cherry	5 00
Howard Cook	Beloit, O.	Best Heifer 1 Year and Under 2—Mildred Douglas	10 00
Same	Beloit, O.	2d Best Topsy of Arylynn	5 00
E. J. Fletcher	Greenfield, N. J.	3d Best Sybil Creslet	3 00
Wm. Lindsay & Son	Plainfield, N. J.	Best Heifer Under 1 Year—Lady Elaine	10 00
E. J. Fletcher	Greenfield, N. H.	2d Best Romalla	5 00
Howard Cook	Beloit, O.	3d Best Annetta of Arylynn	3 00
Same	Beloit, O.	Best Exhibitor's Herd	30 00
E. J. Fletcher	Greenfield, N. H.	2d Best	15 00
Wm. Lindsay & Son	Plainfield, N. J.	3d Best	H. C.
Howard Cook	Beloit, O.	Best Breeder's Young Herd	30 00
Wm. Lindsay & Son	Plainfield, N. H.	2d Best	15 00
E. J. Fletcher	Greenfield, N. H.	3d Best	H. C.
Same	Greenfield, N. H.	Best Get of Sire	20 00
Wm. Lindsay & Son	Plainfield, N. J.	2d Best	10 00
Howard Cook	Beloit, O.	3d Best	H. C.
Wm. Lindsay & Son	Plainfield, N. J.	Best Produce of Cow	10 00
Howard Cook	Beloit, O.	2d Best	5 00
E. J. Fletcher	Greenfield, N. H.	3d Best	H. C.

FAT CATTLE.

Name of Owner.	Postoffice.	Awards.	Amount.
D. Bradfute & Son	Cedarville, O.	Best Steer or Spayed Heifer 2 Years and Under 3	$15 00
Otto G. Callahan	Helena, Ky	2d Best	10 00
D. Bradfute & Son	Cedarville, O.	Best Steer or Spayed Heifer 1 Year and Under 2	15 00
Fletcher S. Hines	Malott Park, Ind.	2d Best	10 00

THIRD DEPARTMENT—SHEEP.

E. L. LYBARGER, Member in Charge.

MERINOS—CLASS A.

Name of Owner.	Postoffice.	Awards.	Amount.
S. Blamer & Son	Johnstown, O	Best Ram 2 Years or Over	$10 00
R. D. Williamson	Xenia, O	2d Best	5 00
A. H. Dean	W. Mansfield, O	3d Best	3 00
Same	W. Mansfield, O	Best Ram 1 Year and Under 2	10 00
R. D. Williamson	Xenia, O	2d Best	5 00
A. H. Dean	W. Mansfield, O	3d Best	3 00
R. D. Williamson	Xenia, O	Best Ram Under 1 Year	8 00
S. Blamer & Son	Johnstown, O	2d Best	4 00
L. W. Perkins	W. Mansfield, O	3d Best	2 00
S. Blamer & Son	Johnstown, O	Best Ewe 2 Years or Over	10 00
F. W. Perkins	W. Mansfield, O	2d Best	5 00
R. D. Williamson	Xenia, O	3d Best	3 00
S. Blamer & Son	Johnstown, O	Best Ewe 1 Year and Under 2	10 00
R. D. Williamson	Xenia, O	2d Best	5 00
Same	Xenia, O	3d Best	3 00
C. H. Bell	Ashley, O	Best Ewe Under 1 Year	8 00
R. D. Williamson	Xenia, O	2d Best	4 00
C. H. Bell	Ashley, O	3d Best	2 00
S. Blamer & Son	Johnstown, O	Best Flock	10 00
R. D. Williamson	Xenia, O	2d Best	5 00
C. H. Bell	Ashley. O	3d Best	H. C.
R. D. Williamson	Xenia, O	Best Get of Sire	10 00
C. H. Bell	Ashley, O	2d Best	5 00

CLASS B.

Name of Owner.	Postoffice.	Awards.	Amount.
R. D. Williamson	Xenia, O	Best Ram 2 Years or Over	$10 00
S. Blamer & Son	Johnstown, O	2d Best	5 00
F. W. Perkins	W. Mansfield, O	3d Best	3 00
S. Blamer & Son	Johnstown, O	Best Ram 1 Year and Under 2	10 00
R. D. Williamson	Xenia, O	2d Best	5 00
Geo. E. Helser	Herring, O	3d Best	3 00
R. D. Williamson	Xenia, O	Best Ram Under 1 Year	8 00
S. Blamer & Son	Johnstown, O	2d Best	4 00
Geo. E. Helser	Herring, O	3d Best	2 00
S. Blamer & Son	Johnstown, , O	Best Ewe 2 Years or Over	10 00
Same	Johnstown, O	2d Best	5 00
R. D. Williamson	Xenia, O	3d Best	3 00
S. Blamer & Son	Johnstown, O	Best Ewe 1 Year and Under 2	10 00
Same	Johnstown, O	2d Best	5 00
Geo. E. Helser	Herring, O	3d Best	3 00
S. Blamer & Son	Johnstown, O	Best Ewe Under 1 Year	8 00
Geo. E. Helser	Herring, O	2d Best	4 00
R. D. Williamson	Xenia, O	3d Best	2 00
S. Blamer & Son	Johnstown, O	Best Flock	10 00
F. W. Perkins	W. Mansfield, O	2d Best Flock	5 00
R D. Williamson	Xenia, O	3d Best Flock	H. C.
S. Blamer & Son	Johnstown, O	Best Get of Sire	10 00
R. D. Williamson	Xenia, O	2d Best	5 00
A. H. Dean	W Mansfield, O	3d Best	H. C.

DELAINE MERINOS.

Name of Owner.	Postoffice.	Awards.	Amount.
S. Blamer & Son	Johnstown, O	Best Ram 2 Years or Over	$10 00
R. D. Williamson	Xenia, O	2d Best	5 00
Wilson Bros	Fredericktown, O	3d Best	3 00
S. Blamer & Son	Johnstown, O	Best Ram 1 Year and Under 2	10 00
R. D. Williamson	Xenia. O	2d Best	5 00
S. Blamer & Son	Johnstown, O	3d Best	3 00
Geo. E. Helser	Herring, O	Best Ram Under 1 Year	8 00
C. H. Bell	Ashley, O	2d Best	4 00
Geo. E. Helser	Herring, O	3d Best	2 00
C. L. Freed	Lancaster, O	Best Ewe 2 Years or Over	10 00
S. Blamer & Son	Johnstown, O	2d Best	5 00
R. D. Williamson	Xenia, O	3d Best	3 00
Geo. E. Helser	Herring, O	Best Ewe 1 Year and Under 2	10 00
S. Blamer & Son	Johnstown, O	2d Best	5 00
Geo. E. Helser	Herring, O	3d Best	3 00
Same	Herring, O	Best Ewe Under 1 Year	8 00
Same	Herring, O	2d Best	4 00
Same	Herring, O	3d Best	2 00
S. Blamer & Son	Johnstown, O	Best Flock	10 00
Geo. E. Helser	Herring, O	2d Best	5 00
Same	Herring, O	Best Get of Sire	10 00
C. H. Bell	Ashley, O	2d Best	5 00

FRENCH MERINOS RAMBOUILLET

Name of Owner.	Postoffice.	Awards.	Amount.
Shaw & Bader	Marits, O	Best Ram 2 Years or Over—Bub.	$10 00
Col. Geo. Truesdell	Deer Park, Md	2d Best	5 00
L. W. Shaw	Marits, O	3d Best	3 00
Shaw & Bader	Marits, O	Best Ram 1 Year and Under 2—Ono	10 00
Same	Marits, O	2d Best President	5 00
Col. Geo. Truesdell	Deer Park, Md	3d Best	3 00
Shaw & Bader	Marits, O	Best Ram Under 1 Year—O'Yes	5 00
Col. Geo. Truesdell	Deer Park, Md	2d Best	3 00
Shaw & Bader	Marits, O	3d Best	2 00
Same	Marits, O	Best Ewe 2 Years or Over—Model.	10 00
Same	Marits, O	2d Best Invincible	5 00
Same	Marits, O	3d Best Ruberta	3 00
Col. Geo. Truesdell	Deer Park, Md	Best Ewe 1 Year and Under 2	10 00
Shaw & Bader	Marits, O	2d Best Beauty	5 00
Same	Marits, O	3d Best Sara	3 00
Same	Marits, O	Best Ewe Under 1 Year—Agnes	5 00
Col. Geo. Truesdell	Deer Park, Md	2d Best	3 00
Shaw & Bader	Marits, O	3d Best Hester	2 00
Same	Marits, O	Best Flock	10 00
Same	Marits, O	2d Best	5 00
Same	Marits, O	Best Get of Sire	10 00
Col. Geo. Truesdell	Deer Park, Md	2d Best	5 00

COTSWOLDS.

Name of Owner.	Postoffice.	Awards.	Amount
D. B. Watt & Son	Xenia, O	Best Ram 2 Years or Over	$10 00
Wilson Bros	Muncie, Ind	2d Best	5 00
D. B. Watt & Son	Xenia, O	3d Best	3 00
Wilson Bros	Muncie, Ind	Best Ram 1 Year and Under 2	10 00
D. B. Watt & Son	Xenia, O	2d Best	5 00
Wilson Bros	Muncie, Ind	3d Best	3 00
Wilson Bros	Muncie, Ind	Best Ram Under 1 Year	5 00
D. B. Wattt & Son	Xenia, O	2d Best	3 00
Wilson Bros	Muncie, Ind	3d Best	2 00
D. B. Watt & Son	Xenia, O	Best Ewe 2 Years or Over	10 00
Wilson Bros	Muncie, Ind	2d Best	5 00
Same	Muncie, Ind	3d Best	3 00
Same	Muncie, Ind	Best Ewe 1 Year and Under 2	10 00
D. B. Watt & Son	Xenia, O	2d Best	5 00

COTSWOLDS—Concluded.

Name of Owner.	Postoffice.	Awards.	Amount.
D. B. Watt & Son	Xenia, O	3d Best Ewe 1 Year and Under 2.	$ 3 00
Wilson Bros	Muncie, Ind	Best Ewe Under 1 Year	5 00
D. B. Watt & Son	Xenia, O	2d Best	3 00
Same	Xenia, O	3d Best	2 00
Same	Xenia, O	Best Flock	10 00
Wilson Bros	Muncie, Ind	2d Best	5 00
C. Schwert & Sons	Galion, O	3d Best	H. C.
Wilson Bros	Muncie, Ind	Best Get of Sire	10 00
D. B. Watt & Son	Xenia, O	2d Best	5 00
C. Schwert & Sons	Galion, O	3d Best	H. C.

OXFORD DOWNS.

Name of Owner.	Postoffice.	Awards.	Amount.
O. D. Worden	Leonidas, Mich	Best Ram 2 Years or Over	$10 00
John C. Williamson	Xenia, O	2d Best	5 00
O. D. Worden	Leonidas, Mich	3d Best	3 00
Geo. W. Heskett, Jr.	Fulton, O	Best Ram 1 Year and Under 2	10 00
John C. Williamson	Xenia, O	2d Best	5 00
O. D. Worden	Leonidas, Mich	3d Best	3 00
Geo. W. Heskett, Jr	Fulton, O	Best Ram Under 1 Year	5 00
John C. Williamson	Xenia, O	2d Best	3 00
O. D. Worden	Leonidas, Mich	3d Best	2 00
John C. Williamson	Xenia, O	Best Ewe 2 Years or Over	10 00
O. D. Worden	Leonidas, Mich	2d Best	5 00
John C. Williamson	Xenia, O	3d Best	3 00
Same	Xenia, O	Best Ewe 1 Year and Under 2	10 00
Geo. W. Heskett, Jr	Fulton, O	2d Best	5 00
John C. Williamson	Xenia, O	3d Best	3 00
Geo. W. Heskett, Jr	Fulton, O	Best Ewe Under 1 Year	5 00
O. D. Worden	Leonidas, Mich	2d Best	3 00
John C. Williamson	Xenia, O	3d Best	2 00
Geo. W. Heskett, Jr	Fulton, O	Best Flock	10 00
John C. Williamson	Xenia, O	2d Best	5 00
O. D. Worden	Leonidas, Mich	3d Best	H. C.
John C. Williamson	Xenia, O	Best Get of Sire	10 00
Geo. W. Heskett	Fulton, O	2d Best	5 00

SHROPSHIRE DOWNS.

Name of Owner.	Postoffice.	Awards.	Amount.
C H. Hutchison	White Pigeon, Mich.	Best Ram 2 Years or Over	$10 00
J. S. McDowell	Troy, O	2d Best	5 00
S. O. Taylor & Son	W. Liberty, O	3d Best	3 00
C. H. Hutchison	White Pigeon, Mich.	Best Ram 1 Year and Under 2	10 00
J. S. McDowell	Troy, O	2d Best	5 00
C. H. Hutchison	White Pigeon, Mich.	3d Best	3 00
Same	White Pigeon, Mich.	Best Ram Under 1 Year	5 00
S. O. Taylor & Son	West Liberty O	2d Best	3 00
C. H. Hutchison	White Pigeon, Mich.	3d Best	2 00
Same	White Pigeon, Mich.	Best Ewe 2 Years or Over	10 00
S. O. Taylor & Son	W. Liberty, O	2d Best	5 00
C. H. Hutchison	White Pigeon, Mich.	3d Best	3 00
Same	White Pigeon, Mich.	Best Ewe 1 Year and Under 2	10 00
S O. Taylor & Son	West Liberty, O	2d Best	5 00
C. H. Hutchison	White Pigeon, Mich.	3d Best	3 00
Same	White Pigeon, Mich.	Best Ewe Under 1 Year	5 00
O. Taylor & Son	West Liberty, O	2d Best	3 00
C. H. Hutchison	White Pigeon, Mich.	3d Best	2 00
Same	White Pigeon, Mich.	Best Flock	10 00
S. O. Taylor & Son	West Liberty, O	2d Best	5 00
J. S. McDowell	Troy, O	3d Best	H. C.
C. H. Hutchison	White Pigeon, Mich.	Best Get of Sire	10 00
J. S. McDowell	Troy, O	2d Best	5 00

HAMPSHIRE DOWNS.

Name of Owner.	Postoffice.	Awards.	Amount.
P. W. Artz	Osborn, O	Best Ram 2 Years or Over	$10 00
Same	Osborn, O	2d Best	5 00
W. J. Cherry	Xenia, O	3d Best	3 00
P. W. Artz	Osborn, O	Best Ram 1 Year and Under 2	10 00
Same	Osborn, O	2d Best	5 00
W. J. Cherry	Xenia, O	3d Best	3 00
P. W. Artz	Osborn, O	Best Ram Under 1 Year	5 00
W. J. Cherry	Xenia, O	2d Best	3 00
P. W. Artz	Osborn, O	3d Best	2 00
W. J. Cherry	Xenia, O	Best Ewe 2 Years or Over	10 00
P. W. Artz	Osborn, O	2 Best	5 00
Same	Osborn, O	3d Best	3 00
Same	Osborn, O	Best Ewe 1 Year and Under 2	10 00
Same	Osborn, O	2d Best	5 00
W. J. Cherry	Xenia, O	3d Best	3 00
P. W. Artz	Osborn, O	Best Ewe Under 1 Year	5 00
Same	Osborn, O	2d Best	3 00
W. J. Cherry	Xenia, O	3d Best	2 00
P. W. Artz	Osborn, O	Best Flock	10 00
W. J. Cherry	Xenia, O	2d Best	5 00
P. W. Artz	Osborn, O	Best Get of Sire	10 00
W. J. Cherry	Xenia, O	2d Best	5 00

SOUTHDOWNS.

Name of Owner.	Postoffice.	Awards.	Amount.
Wilson Bros	Muncie, Ind	Best Ram 2 Years or Over	$10 00
C. S. Lyon	Harrodsburg, Ky	2d Best	5 00
R. C. Watt	Cedarville, O	3d Best	3 00
W. H. Compton & Son	Monroe, O	Best Ram 1 Year and Under 2	10 00
Same	Monroe, O	2d Best	5 00
Wilson Bros	Muncie, Ind	3d Best	3 00
W. H. Compton & Son	Monroe, O	Best Ram Under 1 Year	5 00
Wilson Bros	Muncie, Ind	2d Best	3 00
R. C. Watt	Cedarville, O	3d Best	2 00
W. H. Compton & Son	Monroe, O	Best Ewe 2 Years or Over	10 00
Wilson Bros	Muncie, Ind	2d Best	5 00
C. S. Lyon	Harrodsburg, Ky	3d Best	3 00
Wilson Bros	Muncie, Ind	Best Ewe 1 Year and Under 2	10 00
R. C. Watt	Cedarville, O	2d Best	5 00
W. H. Compton & Son	Monroe, O	3d Best	3 00
Wilson Bros	Muncie, Ind	Best Ewe Under 1 Year	5 00
C. S. Lyon	Harrodsburg, Ky	2d Best	3 00
W. H. Compton & Son	Monroe, O	3d Best	2 00
Wilson Bros	Muncie, Ind	Best Flock	10 00
W. H. Compton & Son	Monroe, O	2d Best	5 00
C. S. Lyon	Harrodsburg, Ky	3d Best	H. C.
W. H. Compton & Son	Monroe, O	Best Get of Sire	10 00
R. C. Watt	Cedarville, O	2d Best	5 00
C. S. Lyon	Harrodsburg, Ky	3d Best	H. C.

LINCOLNS AND LEICESTERS.

Name of Owner.	Postoffice.	Awards.	Amount.
J. R. Bickett	Xenia, O	Best Ram 2 Years or Over	$10 00
W. A. Lisle & Son	West Liberty, O	2d Best	5 00
J. R. Bickett	Xenia, O	3d Best	3 00
Same	Xenia, O	Best Ram 1 Year and Under 2	10 00
Same	Xenia, O	2d Best	5 00
W. A. Lisle & Son	West Liberty, O	3d Best	3 00
J. R. Bickett	Xenia, O	Best Ram under 1 Year	5 00
W. A. Lisle & Son	West Liberty, O	2d Best	3 00
J. R. Bickett	Xenia, O	3d Best	2 00
Same	Xenia, O	Best Ewe 2 Years or Over	10 00
Same	Xenia, O	2d Best	5 00
W. A. Lisle & Son	West Liberty, O	3d Best	3 00

LINCOLNS AND LEICESTERS—Concluded.

Name of Owner.	Postoffice.	Awards.	Amount.
J. R. Bickett	Xenia, O.	Best Ewe 1 Year and Under 2	$10 00
Same	Xenia, O.	2d Best	5 00
W. A. Lisle & Son	West Liberty, O.	3d Best	3 00
J. R. Bickett	Xenia, O.	Best Ewe Under 1 Year	5 00
W. A. Lisle & Son	West Liberty ,O.	2d Best	3 00
J. R. Bickett	Xenia, O.	3d Best	2 00
Same	Xenia, O.	Best Flock	10 00
Same	Xenia, O.	2d Best	5 00
W. A. Lisle & Son	West Liberty, O.	3d Best	H. C.
J. R. Bickett	Xenia, O.	Best Get of Sire	10 00
W. A. Lisle & Son	West Liberty, O.	2d Best	5 00

DORSET.

Name of Owner.	Postoffice.	Awards.	Amount.
J. B. Henderson	Burgettstown, Pa.	Best Ram 2 Years or Over,Captain	$10 00
J. E. Wing	Mechanicsburg, O.	2d Best	5 00
J. B. Henderson	Burgettstown, Pa.	3d Best	3 00
J. E. Wing	Mechanicsburg, O.	Best Ram 1 Year and Under 2	10 00
J. B. Henderson	Burgettstown, Pa.	2d Best—Valley View Model	5 00
Same	Burgettstown, Pa.	3d Best—Valley View Lad	3 00
J. E. Wing	Mechanicsburg, O.	Best Ram Under 1 Year	5 00
J. B. Henderson	Burgettstown, Pa.	2d Best	3 00
J. E. Wing	Mechanicsburg, O.	3d Best	2 00
J. B. Henderson	Burgettstown, Pa.	Best Ewe 2 Years or Over—Valley View 1	10 00
J. E. Wing	Mechanicsburg, O.	2d Best	5 00
J. B. Henderson	Burgettstown, Pa.	3d Best–Valley View 15	3 00
W. L. Rhinehart & Sons	Steubenville, O.	Best Ewe 1 Year and Under 2	10 00
J. E. Wing	Mechanicsburg, O.	2d Best	5 00
J. B. Henderson	Burgettstown, Pa.	3d Best	3 00
J. E. Wing	Mechanicsburg, O.	Best Ewe Under 1 Year	5 00
J. B. Henderson	Burgettstown, Pa.	2d Best	3 00
J. E. Wing	Mechanicsburg, O.	3d Best	2 00
J. B. Henderson	Burgettstown, Pa.	Best Flock	10 00
J. E. Wing	Mechanicsburg, O.	2d Best	5 00
Same	Mechanicsburg, O.	Best Get of Sire	10 00
J. B. Henderson	Burgettstown, Pa.	2d Best	5 00

FAT SHEEP.

Name of Owner.	Postoffice.	Awards.	Amount.
J. B. Henderson	Burgettstown, Pa.	Best Wether 1 Year and Under 2.	$ 8 00
Same	Burgettstown, Pa.	2d Best	5 00
C. S. Lyon	Harrodsburg, Ky.	Best Wether Lamb	6 00
Same	Harrodsburg, Ky.	2d Best	4 00
T. D. Postle	Camp Chase, O.	3d Best	2 00
J. B. Henderson	Burgettstown, Pa.	Best Pen 3 Wethers any age.	10 00
C. S. Lyon	Harrodsburg, Ky.	2d Best	5 00
Same	Harrodsburg, Ky.	Best Pen of Five Wether Lambs.	10 00
T. D. Postle	Camp Chase, O.	2d Best	5 00

FOURTH DEPARTMENT—SWINE.

A. P. SANDLES, Member in Charge.

BERKSHIRES.

Name of Owner.	Postoffice.	Awards.	Amount.
Etzler & Moses	Decatur, Ind	Best Boar 2 Years or over—General Starlight	$12 00
Hood Farm	Lowell, Mass	2d Best—Model Duke of Hood Farm	6 00
J. L. Axline	Pataskala, O	3d Best—Licking Lee	3 00
Hood Farm	Lowell, Mass	Best Boar 1 Year and Under 2— Hood Farm Lord Curzon 50	10 00
Same	Lowell, Mass	2d Best.....Hood Farm Lord Curzon 47	5 00
W. H. O. Goist	Girard, O	3d Best.....Lord Majestic	2 00
Etzler & Moses	Decatur, Ind	Best Boar 6 Months and Under 1 Year	8 00
Same	Decatur, Ind	2d Best	4 00
Hood Farm	Lowell, Mass	3d Best	2 00
Etzler & Moses	Decatur, Ind	Best Boar Under 6 Months	6 00
J. L. Axline	Pataskala, O	2d Best	3 00
Same	Pataskala, O	3d Best	2 00
Hood Farm	Lowell, Mass	Best Sow 2 Years or Over— High Clere Countess XIX	12 00
J. L. Axline	Pataskala, O	2d Best.....Licking Lee	6 00
Hood Farm	Lowell, Mass	3d Best.....Hood Farm King Clere	3 00
Same	Lowell, Mass	Best Sow 1 Year and Under 2— Hood Farm Holyrood 22d	10 00
Same	Lowell, Mass	2d Best.....Hood Farm Lady Longfellow 36	5 00
W. J. Tharp	Pataskala, O	3d Best.....Victor Beauty	2 00
Hood Farm	Lowell, Mass	Best Sow 6 Months and Under 1 Year— Hood Farm Lady Longfellow 38	8 00
Same	Lowell, Mass	2d Best.....Hood Farm Holyrood 24	4 00
J. L. Axline	Pataskala, O	3d Best.....Licking Belle 2d	2 00
Etzler & Moses	Decatur, Ind	Best Sow Under 6 Months	6 00
Same	Decatur, Ind	2d Best	3 00
Same	Decatur, Ind	3d Best	2 00
		(Breeders' Rings.)	
Hood Farm	Lowell, Mass	Best 4 Swine, the Get of 1 Boar	15 00
Etzler & Moses	Decatur, Ind	2d Best	8 00
Hood Farm	Lowell, Mass	3d Best	H. C.
Etzler & Moses	Decatur, Ind	Best 4 Pigs, the Produce of 1 Sow	15 00
J. L. Axline	Pataskala, O	2d Best	8 00
Hood Farm	Lowell, Mass	Best Boar and 3 Sows Over 1 Year	15 00
J. L. Axline	Pataskala, O	2d Best	8 00
Etzler & Moses	Decatur, Ind	Best Boar and 3 Sows Under 1 Year	15 00
Hood Farm	Lowell, Mass	2d Best	8 00

POLAND CHINAS.

Name of Owner.	Postoffice.	Awards.	Amount.
Foster & Gabriel	Dalton, O	Best Boar 2 Years or Over— Gabriel's Perfection	$12 00
J. M. Linson	South Solon, O	2d Best.....Legality	6 00
Watkins & Broadway	Centerville, O	Best Boar 1 Year and Under 2—Black Sunshine	10 00
L. Irvin Parrett	Washington C. H., O	2d Best.....Sunshine Eclipse	5 00
Ed. Klever	Bloomingburg, O	3d Best.....Front Rank	2 00
Same	Bloomingburg, O	Best Boar 6 Months and Under 1 Year	8 00
Bruce Bros	Mt. Gilead, O	2d Best	4 00
John Salmon	Washington C.H.,O.	3d Best—Perfect Sunshine U. S.	2 00
F. Knob & Son	Ontario, O	Best Boar Under 6 Months	6 00
Thos. Hunter	Morrow, O	2d Best	3 00
R. K. Beam & Sons	Ansonia, O	3d Best	2 00
F. B. McNeal	Troy, O	Best Sow 2 Years or Over—Beal's Beauty 3d	12 00
R. K. Beam & Sons	Ansonia, O	2d Best.....Nellie Sunshine	6 00
J. M. Linson	South Solon, O	3d Best.....Velma 3d	3 00
Same	South Solon, O	Best Sow 1 Year and Under 2—Legal's Maid	10 00
F. B. McNeal	Troy, O	2d Best.....Queen McD.	5 00
C. C. Smith	Plain City, O	3d Best.....Ohio Daisy	2 00
Ed. Klever	Bloomingburg, O	Best Sow 6 Months and Under 1 Year	8 00
Bruce Bros	Mt. Gilead, O	2d Best	4 00

POLAND CHINAS—Concluded.

Name of Owner.	Postoffice.	Awards.	Amount.
Ed. Klever	Bloomingburg, O.	3d Best Sow 6 Months and Under 1 Year	$ 2 00
Armstrong & Goff	Mt. Gilead, O.	Best Sow Under 6 Months	6 00
Thos. Hunter	Morrow, O.	2d Best	3 00
Robinson & Williams	Piqua, O.	3d Best	2 00
		(Breeders' Rings.)	
Ed. Klever	Bloomingburg, O.	Best 4 Swine, the Get of One Boar	15 00
Bruce Bros	Mt. Gilead, O.	2d Best	8 00
Thos. Hunter	Morrow, O.	3d Best	H. C.
Robinson & Williams	Piqua, O.	Best 4 Pigs the Produce of One Sow	15 00
Armstrong & Goff	Mt. Gilead, O.	2d Best	8 00
F. Kolb & Son	Ontario, O.	3d Best	H. C.
J. M. Linson	South Solon, O.	Best Boar and 3 Sows Over 1 Year	15 00
R. K. Beam & Sons	Ansonia, O.	2d Best	8 00
C. C. Smith	Plain City, O.	3d Best	H. C.
Ed. Klever	Bloomingburg, O.	Best Boar and 3 Sows Under 1 Year	15 00
Bruce Bros	Mt. Gilead, O.	2d Best	8 00
Armstrong & Goff	Mt. Gilead, O.	3d Best	H. C.

CHESTER WHITES.

Name of Owner.	Postoffice.	Awards.	Amount
C. Hintz & Son	Fremont, O.	Best Boar 2 Years or Over— Dextre	$12 00
J. L. Beringer	Marion, O.	2d Best Follow Me	6 00
F. P. Dill	Westerville, O.	3d Best Superior	3 00
Same	Westerville, O.	Best Boar 1 Year and Under 2—Long Boy	10 00
J. L. Beringer	Marion, O.	2d Best Sensation	5 00
C. Hintz & Son	Fremont, O.	3d Best Jack	2 00
F. P. & J. J. Hardin	Lima, O.	Best Boar 6 Months and Under 1 Year	8 00
C. Hintz & Son	Fremont, O.	2d Best	4 00
F. P. & J. J. Hardin	Lima, O.	3d Best	2 00
Same	Lima, O.	Best Boar Under 6 Months	6 00
Same	Lima, O.	2d Best	3 00
Same	Lima, O.	3d Best	2 00
Same	Lima, O.	Best Sow 2 Years or Over— Orange Blossom	12 00
Wm. T. Dever	Lucasville, O.	2d Best Devere's Model 3d	6 00
Same	Lucasville, O.	3d Best Devere's Model	3 00
F. P. & J. J. Hardin	Lima, O.	Best Sow 1 Year and Under 2—Juno	10 00
C. Hintz & Son	Fremont, O.	2d Best Cherry's Pride	5 00
F. P. & J. J. Hardin	Lima, O.	3d Best Early Bird	2 00
Same	Lima, O.	Best Sow 6 Months and Under 1 Year—Maver	8 00
Same	Lima, O.	2d Best	4 00
F. P. Dill	Westerville, O.	3d Best	2 00
Henry Thibaut	Prospect, O.	Best Sow Under 6 Months	6 00
F. P. & J. J. Hardin	Lima, O.	2d Best	3 00
C. Hintz & Son	Fremont, O.	3d Best	2 00
		(Breeders' Rings)	
F. P. & J. J. Hardin	Lima, O.	Best 4 Swine, the Get of One Boar	15 00
J. L. Beringer	Marion, O.	2d Best	8 00
F. P. & J. J. Hardin	Lima, O.	3d Best	H. C.
Same	Lima, O.	Best 4 Pigs, the Produce of One Sow	15 00
Henry Thibaut	Prospect, O.	2d Best	8 00
F. P. & J. J. Hardin	Lima, O.	Best Boar and 3 Sows Over 1 Year	15 00
Wm. T. Dever	Lucasville, O.	2d Best	8 00
F. P. & J. J. Hardin	Lima, O.	Best Boar and 3 Sows Under 1 Year	15 00
C Hintz & Son	Fremont, O.	2d Best	8 00

DUROC JERSEYS.

Name of Owner.	Postoffice.	Awards.	Amount.
Watt & Foust	Xenia, O.	Best Boar 2 Years or Over	$12 00
Same	Xenia, O.	2d Best	6 00
Mahan Bros	Osborn, O.	3d Best	3 00
Watt & Foust	Xenia, O.	Best Boar 1 Year and Under 2	10 00
Mahan Bros	Osborn, O.	2d Best	5 00

DUROC JERSEYS—Concluded.

Name of Owner.	Postoffice.	Awards.	Amount.
Watt & Foust	Xenia, O	3d Best Boar 1 Year and Under 2	$ 2 00
Same	Xenia, O	Best Boar 6 Months and Under 1 Year	8 00
Mahan Bros	Osborn, O	2d Best	4 00
Watt & Foust	Xenia, O	3d Best	2 00
Same	Xenia, O	Best Boar Under 6 Months	6 00
Mahan Bros	Osborn, O	2d Best	3 00
Watt & Foust	Xenia, O	3d Best	2 00
Mahan Bros	Osborn, O,	Best Sow 2 Years or Over	12 00
Watt & Foust	Xenia, O	2d Best	6 00
Same	Xenia, O	3d Best	3 00
Mahan Bros	Osborn, O	Best Sow 1 Year and Under 2	10 00
Watt & Foust	Xenia, O	2d Best	5 00
Mahan Bros	Osborn, O	3d Best	2 00
Watt & Foust	Xenia, O	Best Sow 6 Months and Under 1 Year	8 00
Same	Xenia, O	2d Best	4 00
Mahan Bros	Osborn, O	3d Best	2 00
Same	Osborn, O	Best Sow Under 6 Months	6 00
Same	Osborn, O	2d Best	3 00
W. P. Whittier	Galena, O	3d Best	2 00
		(Breeders' Rings)	
Mahan Bros	Osborn, O	Best 4 Swine, the Get of One Boar	15 00
Watt & Foust	Xenia, O	2d Best	8 00
Same	Xenia, O	3d Best	H. C.
Madan Bros	Osborn, O	Best 4 Pigs, the Produce of one Sow	15 00
Watt & Foust	Xenia, O	2d Best	8 00
W. P. Whittier	Galena, O	3d Best	H. C.
Mahan Bros	Osborn, O	Best Boar and 3 Sows Over 1 Year	15 00
Watt & Foust	Xenia, O	2d Best	8 00
Same	Xenia, O	Best Boar and 3 Sows Under 1 Year	15 00
Mahan Bros	Osborn, O	2d Best	8 00

LARGE YORKSHIRES AND TAMROCKS.

Name of Owner.	Postoffice.	Awards.	Amount.
W. E. Rockhill	Etna Green, Ind	Best Boar 2 Years or Over— Dalmeny Topsman	$10 00
F. L. Postle	Camp Chase, O	2d Best.......Swell	5 00
C. P. Dickerman	Mallet Creek, O	Best Boar 1 Year and Under 2— Eureka Hero	10 00
F. L. Postle	Camp Chase, O	2d Best.......Duke of the Cedars	5 00
C. Hintz & Son	Fremont, O	3d Best.......Woodstock Knight	H. C.
W. E. Rockhill	Etna Green, Ind	Best Boar 6 Months and Under 1 Year— U. S. Champion 4th	8 00
C. P. Dickerman	Mallet Creek, O	2d Best.......Eureka Nobleman	4 00
C. Hintz & Son	Fremont, O	3d Best.......Woodstock King	H. C.
C. P. Dickerman	Mallet Creek, O	Best Boar Under 6 Months--Locust Grove Pat	5 00
Same	Mallet Creek, O	2d Best.......Locust Grove Mike	3 00
C. Hintz & Son	Fremont, O	3d Best.......Fremont Chief 2d	H. C.
C. P. Dickerman	Mallet Creek, O	Best Sow 2 Years or Over—Clara	10 00
W. E. Rockhill	Etna Green, Ind	2d Best.......Cinderilla B	5 00
C. Hintz & Son	Fremont, O	3d Best.......Wellsey Queen	H. C.
Same	Fremont, O	Best Sow 1 Year and Under 2. Woodstock Buttercup	10 00
W. E. Rockhill	Etna Green, Ind	2d Best.......Helen 7th	5 00
Same	Etna Green, Ind	3d Best.......Lady Rainbow	H. C.
Same	Etna Green, Ind	Best Sow 6 Months and Under 1 Year— Lady Sarah	8 00
C. P. Dickerman	Mallet Creek, O	2d Best.......Eureka Pansy	4 00
C. Hintz & Son	Fremont, O	3d Best.......Fremont Belle	H. C.
C. P. Dickerman	Mallet Creek, O	Best Sow Under 6 Months—Locust Grove Model	5 00
Same	Mallet Creek, O	2d Best.......Locust Grove Pride	3 00
C. Hintz & Son	Fremont, O	3d Best.......Fremont Belle 4th	H. C.
		(Breeders' Rings)	
C. P. Dickerman	Mallet Creek, O	Best 4 Swine the Get of 1 Boar	12 00
C. Hintz & Son	Fremont, O	2d Best	6 00
C. P. Dickerman	Mallet Creek, O	Best 4 Pigs, the Produce of One Sow	12 00
C. Hintz & Son	Fremont, O	2d Best	6 00
W. E. Rockhill	Etna Green, Ind	Best Boar and 3 Sows Over 1 Year	12 00
C. Hintz & Son	Fremont, O	2d Best	6 00
C. P. Dickerman	Mallet Creek, O	Best Boar and 3 Sows Under 1 Year	12 00
W. E. Rockhill	Etna Green, Ind	2d Best	6 00
C. Hintz & Son	Fremont, O	3d Best	H. C.

SUFFOLK, SMALL YORKSHIRE AND ESSEX BREEDS.

Name of Owner.	Postoffice.	Awards.	Amount.
Geo. Inechen	Bryant, Ind	Best Boar 2 Years or Over. .Royal John	$10 00
Geo. F. Davis	Dyer, Ind	2d Best	5 00
Geo. Inechen	Bryant, Ind	Best Boar 1 Year and Under 2—Bell Boy	10 00
Geo. F. Davis	Dyer, Ind	2d Best	5 00
Same	Dyer, Ind	Best Boar 6 Months and Under 1 Year	8 00
Geo. Inechen	Bryant, Ind	2d Best	4 00
Geo . F. Davis	Dyer, Ind	3d Best	H. C.
Same	Dyer, Ind	Best Boar Under 6 Months	5 00
Geo. Inechen	Bryant, Ind	2d Best	3 00
Geo. F. Davis	Dyer, Ind	Best Sow 2 Years or Over	10 00
Geo. Inechen	Bryant, Ind	2d Best	5 00
Geo. F. Davis	Dyer, Ind	3d Best	H. C.
Geo. Inechen	Bryant, Ind	Best Sow 1 Year and Under 2	10 00
Geo. F. Davis	Dyer, Ind	2d Best	5 00
Same	Dyer, Ind	3d Best	H. C.
Geo. Inechen	Bryant, Ind	Best Sow 6 Months and Under 1 Year	8 00
Same	Bryant, Ind	2d Best	4 00
Geo. F. Davis	Dyer, Ind	3d Best	H. C.
Geo. Inechen	Bryant, Ind	Best Sow Under 6 Months	5 00
Geo. F. Davis	Dyer, Ind	2d Best	3 00
		(Breeders' Rings)	
Geo. Inechen	Bryant, Ind	Best 4 Swine, Get of One Boar	12 00
Geo. F. Davis	Dyer, Ind	2d Best	6 00
Same	Dyer, Ind	Best 4 Pigs, Produce of One Sow	12 00
Geo. Inechen	Bryant, Ind	2d Best	6 00
Same	Bryant, Ind	Best Boar and 3 Sows Over 1 Year	12 00
Geo. F. Davis	Dyer, Ind	2d Best	6 00
Geo. Inechen	Bryant, Ind	Best Boar and 3 Sows Under 1 Year	12 00
Geo. F. Davis	Dyer, Ind	2d Best	6 00

CHESHIRE AND VICTORIAS.

Name of Owner.	Postoffice.	Awards.	Amount.
Geo. F. Davis	Dyer, Ind	Best Boar 2 Years or Over	$10 00
Ruggles Bros	Milford, Mich	2d Best	5 00
Geo. Inechen	Bryant, Ind	3d Best	H. C.
Same	Bryant, Ind	Best Boar 1 Year and Under 2	10 00
Geo. F. Davis	Dyer, Ind	2d Best	5 00
Same	Dyer, Ind	3d Best	H. C.
Geo. Inechen	Bryant, Ind	Best Boar 6 Months and Under 1 Year	8 00
Geo. F. Davis	Dyer, Ind	2d Best	4 00
Same	Dyer, Ind	3d Best	H. C.
Geo. Inechen	Bryant, Ind	Best Boar Under 6 Months	5 00
Ruggles Bros	Milford, Mich	2d Best	3 00
Same	Milford, Mich	3d Best	H. C.
Geo. Inechen	Bryant, Ind	Best Sow 2 Years or Over	10 00
Geo. F. Davis	Dyer, Ind	2d Best	5 00
Ruggles Bros	Milford, Mich	3d Best	H. C.
Geo. Inechen	Bryant, Ind	Best Sow 1 Year and Under 2	10 00
Ruggles Bros	Milford, Mich	2d Best	5 00
Geo. F. Davis	Dyer, Ind	3d Best	H. C.
Geo. Inechen	Bryant, Ind	Best Sow 6 Months and Under 1 Year	8 00
Geo. F. Davis	Dyer, Ind	2d Best	4 00
Ruggles Bros	Milford, Mich	3d Best	H. C.
Geo. Inechen	Bryant, Ind	Best Sow Under 6 Months	5 00
Geo. F. Davis	Dyer, Ind	2d Best	3 00
Same	Dyer, Ind	3d Best	H. C.
		(Breeders' Rings)	
Geo. Inechen	Bryant, Ind	Best 4 Swine, Get of One Boar	12 00
Geo. F. Davis	Dyer, Ind	2d Best	6 00
Same	Dyer, Ind	3d Best	H. C.
Geo. Inechen	Bryant , Ind	Best 4 Pigs, Produce of One Sow	12 00
Ruggles Bros	Milford, Mich	2d Best	6 00
Geo. Inechen	Bryant, Ind	Best Boar and 3 Sows Over 1 Year	12 00
Ruggles Bros	Milford, Mich	2d Best	6 00
Geo. F. Davis	Dyer, Ind	Best Boar and 3 Sows Under 1 Year	12 00
Geo. Inechen	Bryant, Ind	2d Best	6 00

FIFTH DEPARTMENT—POULTRY.

A. P. SANDLES, Member in Charge.

Owner's Name.	Postoffice.	Kind of Fowl.	Prem.
BARRED PLYMOUTH ROCK.			
Chas. McClave	New London, Ohio	Best Cock	$1 25
Chas. McClave	New London, Ohio	2nd best Cock	75
Chas. McClave	New London, Ohio	Best Breeding Pen	2 00
Eugene Sites	Elyria, Ohio	2nd best Breeding Pen	1 00
Joseph Allemang	Blooming,burg, Ohio	Best Pullet	1 25
Eugene Sites	Elyria, Ohio	2d best Pullet	75
Chas. McClave	New London, Ohio	Best Hen	1 25
Eugene Sites	Elyria, Ohio	2d best Hen	75
Chas. McClave	New London, Ohio	Best Cockerel	1 25
Eugene Sites	Elyria, Ohio	2d best Cockerel	75
WHITE PLYMOUTH ROCK.			
W. T. Elliott	Bloomingburg, Ohio	Best Cock	1 25
Chas. McClave	New London, Ohio	2nd best Cock	75
Benj. Huckeriede & Bro	New Bremen, Ohio, R.R.2	Best Cockerel	1 25
A. F. Herritt	Columbus, O., Miller av. & Oak	2nd best Cockerel	75
W. T. Elliott	Bloomingburg, Ohio	Best Hen	1 25
Chas. McClave	New London, Ohio	2nd best Hen	75
Benj. Huckeriede & Bro	New Bremen, O., R.R.2	Best Pullet	1 25
A. F. Herritt	Columbus, O., Miller av. & Oak	2nd best Pullet	75
Benj. Huckeriede & Bro	New Bremen, O., R.R.2	Best Breeding Pen	2 00
W. T. Elliott	Bloomingburg, Ohio	2nd best Breeding Pen	1 00
BUFF PLYMOUTH ROCK.			
Chas. McClave	New London, Ohio	Best Cock	1 25
Eugene Sites	Elyria, Oiho	2nd best Cock	75
Jas. A. Tucker	Concord, Mich	Best Cockerel	1 25
Chas. McClave	New London, Ohio	2nd best Cockerel	75
Jas. A. Tucker	Concord, Mich	Best Hen	1 25
Eugene Sites	Elyria, Ohio	2nd best Hen	75
Chas. McClave	New London, Ohio	Best Pullet	1 25
Chas. McClave	New London, Ohio	2nd best Pullet	75
Chas. McClave	New London, Ohio	Best Breeding Pen	2 00
BUFF ORPINGTON.			
H. M. Close	Newark, Ohio	Best Cock	1 25
Chas. McClave	New London, Ohio	2nd best Cock	75
Chas. McClave	New London, Ohio	Best Cockerel	1 25
H. M. Close	Newark, Ohio	2nd best Cockerel	75
H. M. Close	Newark, Ohio	Best Hen	1 25
Chas. McClave	New London, Ohio	2nd best Hen	75
Chas. McClave	New London, Ohio	Best Pullet	1 25
Chas. McClave	New London, Ohio	2nd best Pullet	75
Chas. McClave	New London, Ohio	Best Breeding Pen	2 00
H. M. Close	Newark, Ohio	2nd best Breeding Pen	1 00
SILVER WYANDOTTE.			
Armbrust Bros	Armbrust, Pa	Best Cock	1 25
E. J. Haskins	Wakeman, Ohio, R. R. 1	2nd best Cock	75
W. C. Brookover	Carlwick, Ohio	Best Cockerel	1 25
Chas. McClave	New London, Ohio	2nd best Cockerel	75
Jas. A. Tucker	Concord, Mich	Best Hen	1 25
W. C. Brookover	Carlwick, Ohio	2nd best Hen	75
Armbrust Bros	Armbrust, Pa	Best Pullet	1 25
Jas. A. Tucker	Concord, Mich	2nd best Pullet	75
Jas. A. Tucker	Concord, Mich	Best Breeding Pen	2 00
W. C. Brookover	Carlwick, Ohio	2nd best Breeding Pen	1 00
GOLDEN WYANDOTTE.			
Chas. McClave	New London, Ohio	Best Cock	1 25
Chas. McClave	New London, Ohio	2nd best Cock	75
Chas. McClave	New London, Ohio	Best Cockerel	1 25
Jas. A. Tucker	Concord, Mich	2nd best Cockerel	75
Chas. McClave	New London, Ohio	Best Hen	1 25
Chas. McClave	New London, Ohio	2nd best Hen	75
Chas. McClave	New London, Ohio	Best Pullet	1 25
Chas. McClave	New London, Ohio	2nd best Pullet	75
Chas. McClave	New London, Ohio	Best Breeding Pen	2 00
Chas. McClave	New London, Ohio	2nd best Breeding Pen	1 00

POULTRY—Continued.

Owner's Name.	Postoffice.	Kind of Fowl.	Prem.
WHITE WYANDOTTE.			
Chas. McClave	New London, Ohio	Best Cock	$1 25
Chas. McClave	New London, Ohio	2nd best Cock	75
Chas. McClave	New London, Ohio	Best Cockerel	1 25
Chas. McClave	New London, Ohio	2nd best Cockerel	75
Jas. A. Tucker	Concord, Mich	Best Hen	1 25
Chas. McClave	New London, Ohio	2nd best Hen	75
Chas. McClave	New London, Ohio	Best Pullet	1 25
Armbrust Bros	Armbrust, Pa	2nd best Pullet	75
Chas. McClave	New London, Ohio	Best Breeding Pen	2 00
Jas. A Tucker	Concord, Mich	2nd best Breeding Pen	1 00
BLACK WYANDOTTE.			
Armbrust Bros	Armbrust, Pa	Best Cock	1 25
Jas. A. Tucker	Concord, Mich	2nd best Cock	75
Eugene Sites	Elyria, Ohio	Best Cockerel	1 25
Armbrust Bros	Armbrust, Pa	2nd best Cockerel	75
Eugene Sites	Elyria, Ohio	Best Hen	1 25
S. E. Wurst	Elyria, Ohio	2nd best Hen	75
Chas. McClave	New London, Ohio	Best Pullet	1 25
Eugene Sites	Elyria, Ohio	2nd best Pullet	75
Eugene Sites	Elyria, Ohio	Best Breeding Pen	2 00
Armbrust Bros	Armbrust, Pa	2nd best Breeding Pen	1 00
BUFF WYANDOTTE.			
Armbrust Bros	Armbrust, Pa	Best Cock	1 25
Eugene Sites	Elyria, Ohio	2nd best Cock	75
Eugene Sites	Elyria, Ohio	Best Cockerel	1 25
Armbrust Bros	Armbrust, Pa	2nd best Cockerel	75
Owens Bros	Shenandoah, Ohio	Best Hen	1 25
Eugene Sites	Elyria, Ohio	2nd best Hen	75
Eugene Sites	Elyria, Ohio	Best Pullet	1 25
Eugene Sites	Elyria, Ohio	2nd best Pullet	75
Eugene Sites	Elyria, Ohio	Best Breeding Pen	2 00
PARTRIDGE WYANDOTTE.			
Chas. McClave	New London, Ohio	Best Cock	1 25
Eugene Sites	Elyria, Ohio	2nd best Cock	75
Eugene Sites	Elyria, Ohio	Best Cockerel	1 25
Eugene Sites	Elyria, Ohio	2nd Best Cockerel	75
Eugene Sites	Elyria, Ohio	Best Hen	1 25
Chas. McClave	New London, Ohio	2nd best Hen	75
Eugene Sites	Elyria, Ohio	Best Pullet	1 25
Eugene Sites	Elyria, Ohio	2nd best Pullet	75
Eugene Sites	Elyria, Ohio	BestBreeding Pen	2 00
SILVER PENCILED WYANDOTTE.			
Eugene Sites	Elyria, Ohio	Best Cock	1 25
Eugene Sites	Elyria, Ohio	2nd best Cock	75
Eugene Sites	Elyria, Ohio	Best Cockerel	1 25
Eugene Sites	Elyria, Ohio	2nd best Cockerel	75
Eugene Sites	Elyria, Ohio	Best Hen	1 25
Eugene Sites	Elyria, Ohio	2nd best Hen	75
Eugene Sites	Elyria, Ohio	Best Pullet	1 25
Eugene Sites	Elyria, Ohio	2nd best Pullet	75
Eugene Sites	Elyria, Ohio	Best Breeding Pen	2 00
WHITE OR BLACK JAVA.			
Chas. McClave	New London, Ohio	Best Cock	1 25
E. J. Haskins	Wakeman, Ohio, R.R.1	2nd best Cock	75
E. J. Haskins	Wakeman, Ohio, R.R.1	Best Cockerel	1 25
Armbrust Bros	Armbrust, Pa	2nd best Cockerel	75
S. E. Wurst	Elyria, Ohio	Best Hen	1 25
E. J. Haskins	Wakeman, Ohio, R.R.1	2nd best Hen	75
E. J. Haskins	Wakeman, Ohio, R.R.1	Best Pullet	1 25
Armbrust Bros	Armbrust, Pa	2nd best Pullet	75
E. J. Haskins	Wakeman, Ohio, R.R.1	Best Breeding Pen	2 00

POULTRY—Continued.

Owner's Name.	Postoffice.	Kind of Fowl.	Prem.
MOTTLED JAVA.			
Armbrust Bros	Armbrust, Pa	Best Hen	$1 25
Armbrust Bros	Armbrust, Pa	2nd best Hen	75
LIGHT BRAHMA.			
Jas. A. Tucker	Concord, Mich	Best Cock	1 25
Chas. McClave	New London, Ohio	2nd best Cock	75
Jas. A. Tucker	Concord, Mich	Best Cockerel	1 25
Armbrust Bros	Armbrust, Pa	2nd best Cockerel	75
Jas. A. Tucker	Concord, Mich	Best Hen	1 25
Jas. A. Tucker	Concord, Mich	2nd best Hen	75
Jas. A. Tucker	Concord, Mich	Best Pullet	1 25
Chas. McClave	New London, Ohio	2nd best Pullet	75
Jas. A. Tucker	Concord, Mich	Best breeding Pen	2 00
DARK BRAHMA			
Jas. A. Tucker	Concord, Mich	Best Cock	1 25
E. J. Haskins	Wakeman, Ohio, R.R.1	2nd best Cock	75
Jas. A. Tucker	Concord, Mich	Best Cockerel	1 25
Chas. McClave	New London, Ohio	2nd best Cockerel	75
Jas. A. Tucker	Concord, Mich	Best Hen	1 25
Chas. McClave	New London, Ohio	2nd best Hen	75
S. E. Wurst	Elyria, Ohio	Best Pullet	1 25
Jas. A. Tucker	Concord, Mich	2nd best Pullet	75
Jas. A. Tucker	Concord, Mich	Best Breeding Pen	2 00
BUFF COCHIN.			
Jas. A. Tucker	Concord, Mich	Best Cock	1 25
Jas. A. Tucker	Concord, Mich	2nd best Cock	75
Jas. A. Tucker	Concord, Mich	Best Cockerel	1 25
Jas. A. Tucker	Concord, Mich	2nd best Cockerel	75
Jas. A. Tucker	Concord, Mich	Best Hen	1 25
Armbrust Bros	Armbrust, Pa	2nd best Hen	75
Jas. A. Tucker	Concord, Mich	Best Pullet	1 25
Jas. A. Tucker	Concord, Mich	2nd best Pullet	75
Jas. A. Tucker	Concord, Mich	Best Breeding Pen	2 00
PARTRIDGE COCHIN.			
Jas. A. Tucker	Concord, Mich	Best Cock	1 25
Jas. A. Tucker	Concord, Mich	2nd best Cock	75
Armbrust Bros	Armbrust, Pa	Best Cockerel	1 25
Chas. McClave	New London, Ohio	2nd best Cockerel	75
Jas. A. Tucker	Concord, Mich	Best Hen	1 25
Chas. McClave	New London, Ohio	2nd best Hen	75
Chas. McClave	New London, Ohio	Best Pullet	1 25
Chas. McClave	New London, Ohio	2nd best Pullet	75
Jas. A. Tucker	Concord, Mich	Best Breeding Pen	2 00
Chas. McClave	New London, Ohio	2nd best Breeding Pen	1 00
WHITE COCHIN.			
Jas. A. Tucker	Concord, Mich	Best Cock	1 25
Jas. A. Tucker	Concord, Mich	2nd best Cock	75
Jas. A. Tucker	Concord, Mich	Best Cockerel	1 25
Armbrust Bros	Armbrust, Pa	2nd best Cockerel	75
Jas. A. Tucker	Concord, Mich	Best Hen	1 25
Owens Bros	Shenandoah, Ohio	2nd best Hen	75
Jas. A. Tucker	Concord, Mich	Best Pullet	1 25
Jas. A. Tucker	Concord, Mich	2nd best Pullet	75
Jas. A. Tucker	Concord, Mich	Best Breeding Pen	2 00
BLACK COCHIN.			
S. E. Wurst	Elyria, Ohio	Best Cock	1 25
Jas. A. Tucker	Concord, Mich	2nd best Cock	75
Jas. A. Tucker	Concord, Mich	Best Cockerel	1 25
Jas. A. Tucker	Concord, Mich	2nd best Cockerel	75
Chas. McClave	New London, Ohio	Best Hen	1 25
Armbrust Bros	Armbrust, Pa	2nd best Hen	75
Jas. A. Tucker	Concord, Mich	Best Pullet	1 25
Jas. A. Tucker	Concord, Mich	Best Breeding Pen	2 00

POULTRY—Continued.

BLACK LANGSHAN.

Owner's Name.	Postoffice.	Kind of Fowl.	Prem.
Chas. McClave	New London, Ohio	Best Cock	$1 25
M. M. Myers	Marysville, Ohio	2nd best Cock	75
M. M. Myers	Marysville, Ohio	Best Cockerel	1 25
Chas. McClave	New London, Ohio	2nd best Cockerel	75
Chas. McClave	New London, Ohio	Best Hen	1 25
E. J. Haskins	Wakeman, Ohio, R.R.1	2nd best Hen	75
E. J. Haskins	Wakeman, Ohio, R.R.1	Best Pullet	1 25
W. W. Myers	Marysville, Ohio	2nd best Pullet	75
Chas. McClave	New London, Ohio	Best Breeding Pen	2 00
E. J. Haskins	Wakeman, Ohio, R.R.1	2nd best Breeding Pen	1 00

WHITE LANGSHAN.

Owner's Name.	Postoffice.	Kind of Fowl.	Prem.
S. E. Wurst	Elyria, Ohio	Best Cock	1 25
E. J. Haskins	Wakeman, Ohio, R.R.1	2nd best Cock	75
S. E. Wurst	Elyria, Ohio	Best Cockerel	1 25
S. E. Wurst	Elyria, Ohio	Best Hen	1 25
E. J. Haskins	Wakeman, Ohio, R.R.1	2nd best Hen	75
S. E. Wurst	Elyria, Ohio	Best Pullet	1 25

S. C. BROWN LEGHORN.

Owner's Name.	Postoffice.	Kind of Fowl.	Prem.
Jas. A. Tucker	Concord, Mich	Best Cock	1 25
Chas. McClave	New London, Ohio	2nd best Cock	75
Jas. A. Tucker	Concord, Mich	Best Cockerel	1 25
Chas. McClave	New London, Ohio	2nd best Cockerel	75
Chas. McClave	New London, Ohio	Best Hen	1 25
Chas. McClave	New London, Ohio	2nd best Hen	75
Jas. A. Tucker	Concord, Mich	Best Pullet	1 25
Chas. McClave	New London, Ohio	2nd best Pullet	75
Jas. A. Tucker	Concord, Mich	Best Breeding Pen	2 00
Chas. McClave	New London, Ohio	2nd best Breeding Pen	1 00

R. C. BROWN LEGHORN.

Owner's Name.	Postoffice.	Kind of Fowl.	Prem.
Armbrust Bros	Armbrust, Pa	Best Cock	1 25
S. E. Wurst	Elyria, Ohio	2nd best Cock	75
Chas. McClave	New London, Ohio	Best Cockerel	1 25
M. M. Myers	Marysville. Ohio	2nd best Cockerel	75
M. M. Myers	Marysville, Ohio	Best Hen	1 25
Armbrust Bros	Armbrust, Pa	2nd best Hen	75
S. E. Wurst	Elyria, Ohio	Best Pullet	1 25
Chas. McClave	New London, Ohio	2nd best Pullet	75
Chas. McClave	New London, Ohio	Best Breeding Pen	2 00
E. J. Haskins	Wakeman, Ohio, R.R.1	2nd best Breeding Pen	1 00

S. C. WHITE LEGHORN.

Owner's Name.	Postoffice.	Kind of Fowl.	Prem.
Armbrust Bros	Armbrust, Pa	Best Cock	1 25
E. J. Haskins	Wakeman, Ohio, R.R.1	2nd best Cock	75
S. E. Wurst	Elyria, Ohio	Best Cockerel	1 25
E. J. Haskins	Wakeman, Ohio, R.R.1	2nd best Cockerel	75
Chas. McClave	New London, Ohio	Best Hen	1 25
Owens Bros	Shenandoah, Ohio	2nd best Hen	75
Jas. A. Tucker	Concord, Mich	Best Pullet	1 25
Chas. McClave	New London, Ohio	2nd best Pullet	75
Jas. A. Tucker	Concord, Mich	Best Breeding Pen	2 00
Chas. McClave	New London, Ohio	2nd best Breeding Pen	1 00

R. C. WHITE LEGHORN.

Owner's Name.	Postoffice.	Kind of Fowl.	Prem.
Jas. A. Tucker	Concord, Mich	Best Cock	1 25
Armbrust Bros	Armbrust, Pa	2nd best Cock	75
Armbrust Bros	Armbrust, Pa	Best Cockerel	1 25
S. E. Wurst	Elyria, Ohio	2nd best Cockerel	75
Chas. McClave	New London, Ohio	Best Hen	1 25
Armbrust Bros	Armbrust, Pa	2nd best Hen	75
S. E. Wurst	Elyria, Ohio	Best Pullet	1 25
Chas. McClave	New London, Ohio	2nd best Pullet	75
Chas. McClave	New London, Ohio	Best Breeding Pen	2 00

POULTRY—Continued.

Owner's Name.	Postoffice.	Kind of Fowl.	Prem.
	BLACK LEGHORN.		
Armbrust Bros	Armbrust, Pa	Best Cock	$1 25
S. E. Wurst	Elyria, Ohio	2nd best Cock	75
Armbrust Bros	Armbrust, Pa	Best Cockerel	1 25
E. J. Haskins	Wakeman, Ohio, R.R.1	2nd best Cockerel	75
Owens Bros	Shenandoah, Ohio	Best Hen	1 25
M. M. Myers	Marysville, Ohio	2nd best Hen	75
Armbrust Bros	Armbrust, Pa	Best Pullet	1 25
E. J. Haskins	Wakeman, Ohio, R.R.1	2nd best Pullet	75
	BUFF LEGHORN.		
Armbrust Bros	Armbrust, Pa	Best Cock	1 25
Eugene Sites	Elyria, Ohio	2nd best Cock	75
E. J. Haskins	Wakeman, Ohio, R.R.1	Best Cockerel	1 25
Eugene Sites	Elyria, Ohio	2nd best Cockerel	75
E. J. Haskins	Wakeman, Ohio, R.R.1	Best Hen	1 25
Eugene Sites	Elyria, Ohio	2nd best Hen	75
Eugene Sites	Elyria, Ohio	Best Pullet	1 25
E. J. Haskins	Wakeman, Ohio, R.R.1	2nd best Pullet	75
E. J. Haskins	Wakeman, Ohio, R.R.1	Best Breeding Pen	2 00
Eugene Sites	Elyria, Ohio	2nd best Breeding Pen	1 00
	BLACK MINORCA.		
Chas. McClave	New London, Ohio	Best Cockerel	1 25
S. E. Wurst	Elyria, Ohio	2nd best Cockerel	75
Owens Bros	Shenandoah, Ohio	Best Hen	1 25
Chas. McClave	New London, Ohio	2nd best Hen	75
Chas. McClave	New London, Ohio	Best Pullet	1 25
Chas. McClave	New London, Ohio	2nd best Pullet	75
Chas. McClave	New London, Ohio	Best Breeding Pen	2 00
	WHITE MINORCA.		
Chas. McClave	New London, Ohio	Best Cock	1 25
Harry Leibold	Delaware, Ohio	2nd best Cock	75
Chas. McClave	New London, Ohio	Best Cockerel	1 25
S. E. Wurst	Elyria, Ohio	2nd best Cockerel	75
Harry Leibold	Delaware, Ohio	Best Hen	1 25
Harry Leibold	Delaware, Ohio	2nd best Hen	75
Chas. McClave	New London, Ohio	Best Pullet	1 25
S. E. Wurst	Elyria, Ohio	2nd best Pullet	75
Harry Leibold	Delaware, Ohio	Best Breeding Pen	2 00
	BLUE ANDALUSIAN.		
Harry Leibold	Delaware, Ohio	Best Cock	1 25
Armbrust Bros	Armbrust, Pa	2nd best Cock	75
Harry Leibold	Delaware, Ohio	Best Cockerel	1 25
S. E. Wurst	Elyria, Ohio	2nd best Cockerel	75
Chas. McClave	New London, Ohio	Best Hen	1 25
Armbrust Bros	Armbrust, Pa	2nd best Hen	75
Chas. McClave	New London, Ohio	Best Pullet	1 25
S. E. Wurst	Elyria, Ohio	2nd best Pullet	75
	BLACK SPANISH.		
M. M. Myers	Marysville, Ohio	Best Cock	1 25
Armbrust Bros	Armbrust, Pa	2nd best Cock	75
Armbrust Bros	Armbrust, Pa	Best Cockerel	1 25
Owens Bros	Shenandoah, Ohio	2nd best Cockerel	75
Chas. McClave	New London, Ohio	Best Hen	1 25
Armbrust Bros	Armbrust, Pa	2nd best Hen	75
Owens Bros	Shenandoah, Ohio	Best Pullet	1 25
Armbrust Bros	Armbrust, Pa	2nd best Pullet	75
	W. C. BLACK POLISH.		
Jas. A. Tucker	Concord, Mich	Best Cock	1 25
Chas. McClave	New London, Ohio	Best Cockerel	1 25
S. E. Wurst	Elyria, Oiho	2nd best Cockerel	75
Jas. A. Tucker	Concord, Mich	Best Hen	1 25
Chas. McClave	New London, Ohio	2nd best Hen	75
Chas. McClave	New London, Ohio	Best Breeding Pen	2 00

POULTRY—Continued.

WHITE POLISH—BEARDED OR PLAIN.

Owner's Name.	Postoffice.	Kind of Fowl.	Prem.
Armbrust Bros	Armbrust, Pa	Best Cock	$1 25
Jas. A. Tucker	Concord, Mich	2dn best Cock	75
Jas. A. Tucker	Concord, Mich	Best Cockerel	1 25
Jas. A. Tucker	Concord, Mich	Best Hen	1 25
Armbrust Bros	Armbrust, Pa	2nd best Hen	75
Jas. A. Tucker	Concord, Mich	Best Pullet	1 25

GOLDEN POLISH—BEARDED OR PLAIN.

Owner's Name.	Postoffice.	Kind of Fowl.	Prem.
Armbrust Bros	Armbrust, Pa	Best Cock	1 25
Jas. A. Tucker	Concord, Mich	2nd best Cock	75
Armbrust Bros	Armbrust, Pa	Best Cockerel	1 25
Jas. A. Tucker	Concord, Mich	Best Hen	1 25
ArmbrustBros	Armbrust, Pa	Best Pullet	1 25

BUFF LACED POLISH.

Owner's Name.	Postoffice.	Kind of Fowl.	Prem.
Jas. A. Tucker	Concord, Mich	Best Cock	1 25
Armbrust Bros	Armbrust, Pa	2nd best Cock	75
Owens Bros	Shenandoah, Ohio	Best Hen	1 25
Jas. A. Tucker	Concord, Mich	2nd best Hen	75

GOLDEN SPANGLED HAMBURG.

Owner's Name.	Postoffice.	Kind of Fowl.	Prem.
Armbrust Bros	Armbrust, Pa	Best Cock	1 25
E. J. Haskins	Wakeman, Ohio, R.R.1	2nd best Cock	75
Armbrust Bros	Armbrust, Pa	Best Cockerel	1 25
Armbrust Bros	Armbrust, Pa	Best Hen	1 25
E. J. Haskins	Wakeman, Ohio, R.R.1	2nd best Hen	75
Armbrust Bros	Armbrust, Pa	Best Pullet	1 25
E. J. Haskins	Wakeman, Ohio, R.R.1	Best Breeding Pen	2 00

SILVER SPANGLED HAMBURG.

Owner's Name.	Postoffice.	Kind of Fowl.	Prem.
E. J. Haskins	Wakeman, Ohio, R.R.1	Best Cock	1 25
Armbrust Bros	Armbrust, Pa	2nd best Cock	75
Armbrust Bros	Armbrust, Pa	Best Cockerel	1 25
E. J. Haskins	Wakeman, Ohio, R.R.1	2nd best Cockerel	75
E. J. Haskins	Wakeman, Ohio, R.R.1	Best Hen	1 25
Armbrust Bros	Armbrust, Pa	2nd best Hen	75
E. J. Haskins	Wakeman, Ohio, R.R.1	Best Pullet	1 25
S. E. Wurst	Elyria, Ohio	2nd best Pullet	75
E. J. Haskins	Wakeman, Ohio, R.R.1	Best Breeding Pen	2 00

GOLDEN PENCILED HAMBURG.

Owner's Name.	Postoffice.	Kind of Fowl.	Prem.
S. E. Wurst	Elyria, Ohio	Best Cock	1 25
Armbrust Bros	Armbrust, Pa	2nd best Cock	75
Armbrust Bros	Armbrust, Pa	Best Hen	1 25
Owens Bros	Shenandoah, Ohio	2nd best Hen	75
Armbrust Bros	Armbrust, Pa	Best Pullet	1 25

SILVER PENCILED HAMBURG.

Owner's Name.	Postoffice.	Kind of Fowl.	Prem.
Armbrust Bros	Armbrust, Pa	Best Cock	1 25
E. J. Haskins	Wakeman, Ohio, R.R.1	Best Cockerel	1 25
Armbrust Bros	Armbrust, Pa	2nd best Cockerel	75
Armbrust Bros	Armbrust, Pa	Best Hen	1 25
E. J. Haskins	Wakeman, Ohio, R.R.1	2nd best Hen	75
Armbrust Bros	Armbrust, Pa	Best Pullet	1 25
E. J. Haskins	Wakeman, Ohio, R.R.1	2nd best Pullet	75

BLACK HAMBURG.

Owner's Name.	Postoffice.	Kind of Fowl.	Prem.
Chas. McClave	New London, Ohio	Best Cock	1 25
E. J. Haskins	Wakeman, Ohio, R.R.1	2nd best Cock	75
Chas. McClave	New London, Ohio	Best Cockerel	1 25
Armbrust Bros	Armbrust, Pa	2nd best Cockerel	75
Chas. McClave	New London, Ohio	Best Hen	1 25
Chas. McClave	New London, Ohio	2nd best Hen	75
Chas. McClave	New London, Ohio	Best Pullet	1 25
Armbrust Bros	Armbrust, Pa	2nd best Pullet	75

POULTRY—Continued.

Owner's Name.	Postoffice.	Kind of Fowl.	Prem.
WHITE HAMBURG.			
M. M. Myers	Marysville, Ohio	Best Cock	$1 25
Armbrust Bros	Armbrust, Pa	2nd best Cock	75
Armbrust Bros	Armbrust, Pa	Best Cockerel	1 25
E. J. Haskins	Wakeman, Ohio, R.R.1	2nd best Cockerel	75
E. J. Haskins	Wakeman, Ohio, R.R.1	Best Hen	1 25
Owens Bros	Shenandoah, Ohio	2nd best Hen	75
E. J. Haskins	Wakeman, Ohio, R.R.1	Best Pullet	1 25
Armbrust Bros	Armbrust, Pa	2nd best Pullet	75
HOUDAN.			
Eugene Sites	Elyria, Ohio	Best Cock	1 25
Jas. A. Tucker	Concord, Mich	2nd best Cock	75
S. E. Wurst	Elyria, Ohio	Best Cockerel	1 25
Chas. McClave	New London, Ohio	2nd best Cockerel	75
Eugene Sites	Elyria, Ohio	Best Hen	1 25
Owens Bros	Shenandoah, Ohio	2nd best Hen	75
Chas. McClave	New London, Ohio	Best Pullet	1 25
S. E. Wurst	Elyria, Ohio	2nd best Pullet	75
Jas. A. Tucker	Concord, Mich	Best Breeding Pen	2 00
Chas. McClave	New London, Ohio	2nd best Breeding Pen	1 00
CREVECOEUR OR LA FLECHE.			
Armbrust Bros	Armbrust, Pa	Best Cock	1 25
S. E. Wurst	Elyria, Ohio	2nd best Cock	75
Armbrust Bros	Armbrust, Pa	Best Cockerel	1 25
Armbrust Bros	Armbrust, Pa	2nd best Cockerel	75
Eugene Sites	Elyria, Ohio	Best Hen	1 25
Armbrust Bros	Armbrust, Pa	2nd best Hen	75
Armbrust Bros	Armbrust, Pa	Best Pullet	1 25
COLORED, SILVER GRAY OR WHITE DORKING.			
Armbrust Bros	Armbrust, Pa	Best Cock	1 25
Armbrust Bros	Armbrust, Pa	2nd best Cock	75
Chas. McClave	New London, Ohio	Best Cockerel	1 25
S. E. Wurst	Elyria, Ohio	2nd best Cockerel	75
Chas. McClave	New London, Ohio	Best Hen	1 25
Armbrust Bros	Armbrust, Pa	2nd best Hen	75
S. E. Wurst	Elyria, Ohio	Best Pullet	1 25
Chas. McClave	New London, Ohio	2nd best Pullet	75
BLACK BREASTED RED GAME.			
Eugene Sites	Elyria, Ohio	Best Cock	1 25
Armbrust Bros	Armbrust, Pa	2nd best Cock	75
S. E. Wurst	Elyria, Ohio	Best Cockerel	1 25
Eugene Sites	Elyria, Ohio	Best Hen	1 25
Armbrust Bros	Armbrust, Pa	2nd best Hen	75
S. E. Wurst	Elyria, Ohio	Best Pullet	1 25
Armbrust Bros	Armbrust, Pa	2nd best Pullet	75
BROWN RED GAME.			
Eugene Sites	Elyria, Ohio	Best Cock	1 25
S. E. Wurst	Elyria, Ohio	2nd best Cock	75
S. E. Wurst	Elyria, Ohio	Best Cockerel	1 25
Eugene Sites	Elyria, Ohio	2nd best Cockerel	75
Eugene Sites	Elyria, Ohio	Best Hen	1 25
Armbrust Bros	Armbrust, Pa	2nd best Hen	75
S. E. Wurst	Elyria, Ohio	Best Pullet	1 25
BIRCHEN GAME.			
Eugene Sites	Elyria, Ohio	Best Hen	1 25

POULTRY—Continued.

Owner's Name.	Postoffice.	Kind of Fowl.	Prem.

BLACK AND WHITE GAME.

Armbrust Bros	Armbrust, Pa	Best Cock	$1 25
Armbrust Bros	Armbrust, Pa	2nd best Cock	75
Armbrust Bros	Armbrust, Pa	Best Cockerel	1 25
Armbrust Bros	Armbrust, Pa	2nd best Cockerel	75
Armbrust Bros	Armbrust, Pa	Best Hen	1 25
S. E. Wurst	Elyria, Ohio	2nd best Hen	75
Armbrust Bros	Armbrust, Pa	Best Pullet	1 25
Armbrust Bros	Armbrust, Pa	2nd best Pullet	75

SUMATRA GAME.

S. E. Wurst	Elyria, Ohio	Best Cock	1 25
Armbrust Bros	Armbrust, Pa	2nd best Cock	75
S. E. Wurst	Elyria, Ohio	Best Cockerel	1 25
Armbrust Bros	Armbrust, Pa	2nd best Cockerel	75
Eugene Sites	Elyria, Ohio	Best Hen	1 25
S. E. Wurst	Elyria, Ohio	2nd best Hen	75
S. E. Wurst	Elyria, Ohio	Best Pullet	1 25
Armbrust Bros	Armbrust, Pa	2nd best Pullet	75

SILVER OR GOLDEN DUCK WING GAME.

Armbrust Bros	Armbrust, Pa	Best Cock	1 25
Eugene Sites	Elyria, Ohio	2nd best Cock	75
Armbrust Bros	Armbrust, Pa	Best Cockerel	1 25
Armbrust Bros	Armbrust, Pa	2nd best Cockerel	75
Eugene Sites	Elyria, Ohio	Best Hen	1 25
Eugene Sites	Elyria, Ohio	2nd best Hen	75
Armbrust Bros	Armbrust, Pa	Best Pullet	1 25
S. E. Wurst	Elyria, Ohio	2nd best Pullet	75

RED PILE GAME.

S. E. Wurst	Elyria, Ohio	Best Cock	1 25
Eugene Sites	Elyria, Ohio	2d best Cock	75
Eugene Sites	Elyria, Ohio	Best Cockerel	1 25
Armbrust Bros	Armbrust, Pa	2nd best Cockerel	75
Eugene Sites	Elyria, Ohio	Best Hen	1 25
Armbrust Bros	Armbrust, Pa	2nd best Hen	75
Eugene Sites	Elyria, Ohio	Best Pullet	1 25
Armbrust Bros	Armbrust, Pa	2nd best Pullet	75

CORNISH INDIAN GAME.

S. E. Wurst	Elyria, Ohio	Best Cock	1 25
Jas. A. Tucker	Concord, Mich	2nd best Cock	75
Jas. A. Tucker	Concord, Mich	Best Cockerel	1 25
Jas. A. Tucker	Concord, Mich	2nd best Cockerel	75
Chas. McClave	New London, Ohio	Best Hen	1 25
Jas. A. Tucker	Concord, Mich	2nd best Hen	75
Jas. A. Tucker	Concord, Mich	Best Pullet	1 25
Jas. A. Tucker	Concord, Mich	2nd best Pullet	75
Jas. A. Tucker	Concord, Mich	Best Breeding Pen	2 00
E. J. Haskins	Wakeman, Ohio, R.R.1	2nd best Breeding Pen	1 00

B. B. R. BANTAM.

Jas. A. Tucker	Concord, Mich	Best Cock	1 25
S. E. Wurst	Elyria, Ohio	2nd best Cock	75
S. E. Wurst	Elyria, Ohio	Best Cockerel	1 25
Eugene Sites	Elyria, Ohio	Best Hen	1 25
S. E. Wurst	Elyria, Ohio	2nd best Hen	75
S. E. Wurst	Elyria, Ohio	Best Pullet	1 25

SILVER OR GOLDEN DUCK WING BANTAM.

Armbrust Bros	Armbrust, Pa	Best Cock	1 25
Eugene Sites	Elyria, Ohio	2nd best Cock	75
S. E. Wurst	Elyria, Ohio	Best Cockerel	1 25
Armbrust Bros	Armbrust, Pa	2nd best Cockerel	75
Armbrust Bros	Armbrust, Pa	Best Hen	1 25
Armbrust Bros	Armbrust, Pa	2nd best Hen	75
Armbrust Bros	Armbrust, Pa	Best Pullet	1 25
S. E. Wurst	Elyria, Ohio	2nd best Pullet	75

POULTRY—Continued.

Owner's Name.	Postoffice.	Kind of Fowl.	Prem.
RED PILE BANTAM.			
Jas. A. Tucker	Concord, Mich	Best Cock	$1 25
Chas. McClave	New London, Ohio	2nd best Cock	75
S. E. Wurst	Elyria, Ohio	Best Cockerel	1 25
Chas. McClave	New London, Ohio	2nd best Cockerel	75
Chas. McClave	New London, Ohio	Best Hen	1 25
Armbrust Bros	Armbrust, Pa	2nd best Hen	75
Chas. McClave	New London, Ohio	Best Pullet	1 25
S. E. Wurst	Elyria, Ohio	2nd best Pullet	75
GOLDEN SEABRIGHT BANTAM.			
Jas. A. Tucker	Concord, Mich	Best Cock	1 25
Jas. A. Tucker	Concord, Mich	2nd best Cock	75
Armbrust Bros	Armbrust, Pa	Best Cockerel	1 25
Chas. McClave	New London, Ohio	2nd best Cockerel	75
Jas. A. Tucker	Concord, Mich	Best Hen	1 25
Armbrust Bros	Armbrust, Pa	2nd best Hen	75
S. E. Wurst	Elyria, Ohio	Best Pullet	1 25
Chas. McClave	New London, Ohio	2nd best Pullet	75
Jas. A. Tucker	Concord, Mich	Best Breeding Pen	2 00
Chas. McClave	New London, Ohio	2nd best Breeding Pen	1 00
SILVER SEABRIGHT BANTAM.			
Armbrust Bros	Armbrust, Pa	Best Cock	1 25
M. M. Myers	Marysville, Ohio	2nd best Cock	75
S. E. Wurst	Elyria, Ohio	Best Cockerel	1 25
M. M. Myers	Marysville, Ohio	2nd best Cockerel	75
Armbrust Bros	Armbrust, Pa	Best Hen	1 25
M.M. Myers	Marysville, Ohio	2nd best Hen	75
S. E. Wurst	Elyria, Ohio	Best Pullet	1 25
M. M. Myers	Marysville, Ohio	2nd best Pullet	75
BUFF COCHIN BANTAM.			
Jas. A. Tucker	Concord, Mich	Best Cock	1 25
Armbrust Bros	Armbrust, Pa	2nd best Cock	75
Armbrust Bros	Armbrust, Pa	Best Cockerel	1 25
M. M. Myers	Marysville, Ohio	2nd best Cockerel	75
Jas. A. Tucker	Concord, Mich	Best Hen	1 25
Armbrust Bros	Armbrust, Pa	2nd best Hen	75
Armbrust Bros	Armbrust, Pa	Best Pullet	1 25
Owens Bros	Shenandoah, Ohio	2nd best Pullet	75
Jas. A. Tucker	Concord, Mich	Best Breeding Pen	2 00
Armbrust Bros	Armbrust, Pa	2nd best Breeding Pen	1 00
WHITE OR BLACK COCHIN BANTAM.			
Jas. A. Tucker	Concord, Mich	Best Cock	1 25
Armbrust Bros	Armbrust, Pa	2nd best Cock	75
S. E. Wurst	Elyria, Ohio	Best Cockerel	1 25
E. H. Golensha	Ensley, Ala	2nd best Cockerel	75
Jas. A. Tucker	Concord, Mich	Best Hen	1 25
S. E. Wurst	Elyria, Ohio	2nd best Hen	75
E. J. Haskins	Wakeman, Ohio, R.R.1	Best Pullet	1 25
Jas. A. Tucker	Concord, Mich	2nd best Pullet	75
WHITE OR BLACK ROSE COMBED BANTAM.			
Chas. McClave	New London, Ohio	Best Cock	1 25
Armbrust Bros	Armbrust, Pa	2nd best Cock	75
Armbrust Bros	Armbrust, Pa	Best Cockerel	1 25
Chas. McClave	New London, Ohio	2nd best Cockerel	75
Armbrust Bros	Armbrust, Pa	Best Hen	1 25
S. E. Wurst	Elyria, Ohio	2nd best Hen	75
M. M. Myers	Marysville, Ohio	Best Pullet	1 25
Chas. McClave	New London, Ohio	2nd best Pullet	75

POULTRY—Continued.

Owner's Name.	Postoffice.	Kind of Fowl.	Prem.

JAPANESE BANTAM.

Armbrust Bros	Armbrust, Pa	Best Cock	$1 25
S. E. Wurst	Elyria, Ohio	2nd best Cock	75
Jas. A. Tucker	Concord, Mich	Best Cockerel	1 25
Armbrust Bros	Armbrust, Pa	2nd best Cockerel	75
E. H. Golensha	Ensley, Ala	Best Hen	1 25
Chas. McClave	New London, Ohio	2nd best Hen	75
Armbrust Bros	Armbrust, Pa	Best Pullet	1 25
Armbrust Bros	Armbrust, Pa	2nd best Pullet	75

TURKEYS.

BRONZE TURKEYS.

Fred Anthony	North Lawrence, Ohio	Best Cock	1 50
Chas. McClave	New London, Ohio	2nd best Cock	80

WHITE TURKEYS.

S. E. Wurst	Elyria, Ohio	Best Cock	1 50
E. J. Haskins	Wakeman, Ohio	2nd best Cock	80
S. E. Wurst	Elyria, Ohio	Best Cockerel	1 50
Chas. McClave	New London, Ohio	2nd best Cockerel	80
Chas. McClave	New London, Ohio	Best Hen	1 50
E. J. Haskins	Wakeman, Ohio	2nd best Hen	80
S. E. Wurst	Elyria, Ohio	Best Pullet	1 50
E. J. Haskins	Wakeman, Ohio	2nd best Pullet	80

BUFF TURKEYS.

E. J. Haskins	Wakeman, Ohio	Best Cock	1 50
S. E. Wurst	Elyria, Ohio	2nd best Cock	80
E. J. Haskins	Wakeman, Ohio	Best Hen	1 50
S. E. Wurst	Elyria, Ohio	2nd best Hen	80

NARRAGANSETT TURKEYS.

Chas. McClave	New London, Ohio	Best Cock	1 50
Chas. McClave	New London, Ohio	Best Hen	1 50

BLACK TURKEYS.

Chas. McClave	New London, Ohio	Best Cock	1 50
E. J. Haskins	Wakeman, Ohio	2nd best Cock	80
Chas. McClave	New London, Ohio	Best Cockerel	1 50
M. M. Myers	Marysville, Ohio	2nd best Cockerel	80
E. J. Haskins	Wakeman, Ohio	Best Hen	1 50
Chas. McClave	New London, Ohio	2nd best Hen	80
Chas. McClave	New London, Ohio	Best Pullet	1 50
M. M. Myers	Marysville, Ohio	2nd best Pullet	80

SLATE TURKEYS.

Owens Bros	Shenandoah, Ohio	Best Cock	1 50
S. E. Wurst	Elyria, Ohio	2nd best Cock	80
S. E. Wurst	Elyria, Ohio	Best Cockerel	1 50
M. M. Myers	Marysville, Ohio	2nd best Cockerel	80
E. J. Haskins	Wakeman, Ohio	Best Hen	1 50
Owens Bros	Shenandoah, Ohio	2nd best Hen	80
S. E. Wurst	Elyria, Ohio	Best Pullet	1 50
M. M. Myers	Marysville, Ohio	2nd best Pullet	80

POULTRY—Continued.

Owner's Name.	Postoffice.	Kind of Fowl.	Prem.
DUCKS.			
PEKIN.			
E. J. Haskins	Wakeman, Ohio	Best Cock	$1 25
E. J. Haskins	Wakeman, Ohio	2nd best Cock	75
E. J. Haskins	Wakeman, Ohio	Best Cockerel	1 25
Chas. McClave	New London, Ohio	2nd best Cockerel	75
E. J. Haskins	Wakeman, Ohio	Best Hen	1 25
E. J. Haskins	Wakeman, Ohio	2nd best Hen	75
Chas. McClave	New London, Ohio	Best Pullet	1 25
E. J. Haskins	Wakeman, Ohio	2nd best Pullet	75
AYLESBURY.			
S. E. Wurst	Elyria, Ohio	Best Cock	1 25
E. J. Haskins	Wakeman, Ohio	2nd best Cock	75
S. E. Wurst	Elyria, Ohio	Best Cockerel	1 25
E. J. Haskins	Wakeman, Ohio	2nd best Cockerel	75
S. E Wurst	Elyria, Ohio	Best Hen	1 25
E. J. Haskins	Wakeman, Ohio	2nd best Hen	75
S. E. Wurst	Elyria, Ohio	Best Pullet	1 25
E. J. Haskins	Wakeman, Ohio	2nd best Pullet	75
ROUEN.			
Chas. McClave	New London, Ohio	Best Cock	1 25
Owens Bros	Shenandoah, Ohio	2nd best Cock	75
E. J. Haskins	Wakeman, Ohio	Best Cockerel	1 25
E. J. Haskins	Wakeman, Ohio	2nd best Cockerel	75
E. J. Haskins	Wakeman, Ohio	Best Hen	1 25
Chas. McClave	New London, Ohio	2nd best Hen	75
E. J. Haskins	Wakeman, Ohio	Best Pullet	1 25
E. J. Haskins	Wakeman, Ohio	2nd best Pullet	75
CAYUGA.			
Chas. McClave	New London, Ohio	Best Cock	1 25
E. J. Haskins	Wakeman, Ohio	2nd best Cock	75
S. E. Wurst	Elyria, Ohio	Best Cockerel	1 25
E. J. Haskins	Wakeman, Ohio	2nd best Cockerel	75
Chas. McClave	New London, Ohio	Best Hen	1 25
S. E. Wurst	Elyria, Ohio	2nd best Hen	75
S. E. Wurst	Elyria, Ohio	Best Pullet	1 25
M. M. Myers	Marysville, Ohio	2nd best Pullet	75
CRESTED WHITE.			
E. J. Haskins	Wakeman, Ohio	Best Cock	1 25
M. M. Myers	Marysville, Ohio	2nd best Cock	75
E. J. Haskins	Wakeman, Ohio	Best Cockerel	1 25
M. M. Myers	Marysville, Ohio	Best Hen	1 25
Chas. McClave	New London, Ohio	2nd best Hen	75
GRAY CALL.			
Chas. McClave	New London, Ohio	Best Cock	1 25
M. M. Myers	Marysville, Ohio	2nd best Cock	75
E. J. Haskins	Wakeman, Ohio	Best Cockerel	1 25
M. M. Myers	Marysville, Ohio	2nd best Cockerel	75
Owens Bros	Shenandoah, Ohio	Best Hen	1 25
M. M. Myers	Marysville, Ohio	2nd best Hen	75
M. M. Myers	Marysville, Ohio	Best Pullet	1 25
Chas. McClave	New London, Ohio	2nd best Pullet	75
WHITE CALL.			
E. J. Haskins	Wakeman, Ohio	Best Cock	1 25
M. M. Myers	Marysville, Ohio	2nd best Cock	75
M. M. Myers	Marysville, Ohio	Best Cockerel	1 25
Chas. McClave	New London, Ohio	2nd best Cockerel	75
M. M. Myers	Marysville, Ohio	Best Hen	1 25
E. J. Haskins	Wakeman, Ohio	2nd best Hen	75
M. M. Myers	Marysville, Ohio	Best Pullet	1 25
Chas. McClave	New London, Ohio	2nd best Pullet	75

POULTRY—Continued.

Owner's Name.	Postoffice.	Kind of Fowl.	Prem.
MUSCOVY, COLORED.			
E. J. Haskins	Wakeman, Ohio	Best Cock	$1 25
Chas. McClave	New London, Ohio	2nd best Cock	75
E. J. Haskins	Wakeman, Ohio	Best Cockerel	1 25
E. J. Haskins	Wakeman, Ohio	2nd best Cockerel	75
Chas. McClave	New London, Ohio	Best Hen	1 25
E. J. Haskins	Wakeman, Ohio	2nd best Hen	75
E. J. Haskins	Wakeman, Ohio	Best Pullet	1 25
E. J. Haskins	Wakeman, Ohio	2nd best Pullet	75
MUSCOVY, WHITE.			
Chas. McClave	New London, Ohio	Best Cock	1 25
M. M. Myers	Marysville, Ohio	2nd best Cock	75
Chas. McClave	New London, Ohio	Best Cockerel	1 25
E. J. Haskins	Wakeman, Ohio	2nd best Cockerel	75
Chas. McClave	New London, Ohio	Best Hen	1 25
M. M. Myers	Marysville, Ohio	2nd best Hen	75
Chas. McClave	New London, Ohio	Best Pullet	1 25
Chas. McClave	New London, Ohio	2nd best Pullet	75
INDIAN RUNNER.			
Chas. McClave	New London, Ohio	Best Cock	1 25
M. M. Myers	Marysville, Ohio	2nd best Cock	75
C. Schwert & Sons	Galion, Ohio	Best Cockerel	1 25
Chas. McClave	New London, Ohio	Best Hen	1 25
M. M. Myers	Marysville, Ohio	2nd best Hen	75
M. M. Myers	Marysville, Ohio	Best Pullet	1 25
C. Schwert & Sons	Galion, Ohio	2nd best Pullet	75
GEESE.			
TOULOUSE.			
S. E. Wurst	Elyria, Ohio	Best Cock	1 50
Chas. McClave	New London, Ohio	2nd best Cock	80
E. J. Haskins	Wakeman, Ohio	Best Cockerel	1 50
S. E. Wurst	Elyria, Ohio	2nd best Cockerel	80
M. M. Myers	Marysville, Ohio	Best Hen	1 50
E. J. Haskins	Wakeman, Ohio	2nd best Hen	80
M. M. Myers	Marysville, Ohio	Best Pullet	1 50
E. J. Haskins	Wakeman, Ohio	2nd best Pullet	80
EMBDEN.			
M. M. Myers	Marysville, Ohio	Best Cock	1 50
E. J. Haskins	Wakeman, Ohio	2nd best Cock	80
E. J. Haskins	Wakeman, Ohio	Best Cockerel	1 50
Chas. McClave	New London, Ohio	2nd best Cockerel	80
Chas. McClave	New London, Ohio	Best Hen	1 50
S. E. Wurst	Elyria, Ohio	2nd best Hen	80
E. J. Haskins	Wakeman, Ohio	Best Pullet	1 50
Chas. McClave	New London, Ohio	2nd best Pullet	80
AFRICAN.			
Chas. McClave	New London, Ohio	Best Cock	1 50
E. J. Haskins	Wakeman, Ohio	2nd best Cock	80
E. J. Haskins	Wakeman, Ohio	Best Cockerel	1 50
E. J. Haskins	Wakeman, Ohio	2nd best Cockerel	80
E. J. Haskins	Wakeman, Ohio	Best Hen	1 50
Chas. McClave	New London, Ohio	2nd best Hen	80
E. J. Haskins	Wakeman, Ohio	Best Pullet	1 50
E. J. Haskins	Wakeman, Ohio	2nd best Pullet	80
BROWN CHINESE.			
Chas. McClave	New London, Ohio	Best Cock	1 50
M. M. Myers	Marysville, Ohio	2nd best Cock	80
Chas. McClave	New London, Ohio	Best Cockerel	1 50
E. J. Haskins	Wakeman, Ohio	2nd best Cockerel	80
Chas. McClave	New London, Ohio	Best Hen	1 50
Owens Bros	Shenandoah, Ohio	2nd best Hen	80
Chas. McClave	New London, Ohio	Best Pullet	1 50
E. J. Haskins	Wakeman, Ohio	2nd best Pullet	80

POULTRY—Concluded.

Owner's Name.	Postoffice.	Kind of Fowl.	Prem.

WHITE CHINESE.

Chas. McClave	New London, Ohio	Best Cock	$1 50
E. J. Haskins	Wakeman, Ohio	2nd best Cock	80
S. E. Wurst	Elyria, Ohio	Best Cockerel	1 50
M. M. Myers	Marysville, Ohio	2nd best Cockerel	80
Chas. McClave	New London, Ohio	Best Hen	1 50
M. M. Myers	Marysville, Ohio	2nd best Hen	80
M. M. Myers	Marysville, Ohio	Best Pullet	1 50
Chas. McClave	New London, Ohio	2nd best Pullet	80

WILD.

S. E. Wurst	Elyria, Ohio	Best Cock	1 50
M. M. Myers	Marysville, Ohio	2nd best Cock	80
S. E. Wurst	Elyria, Ohio	Best Cockerel	1 50
Chas. McClave	New London, Ohio	2nd best Cockerel	80
S. E. Wurst	Elyria, Ohio	Best Hen	1 50
Chas. McClave	New London, Ohio	2nd best Hen	80
S. E. Wurst	Elyria, Ohio	Best Pullet	1 50
Chas. McClave	New London, Ohio	2nd best Pullet	80

ORNAMENTAL CLASS.

George Brown	Hillsboro, Ohio	Best Pair Swans	2 00
George Brown	Hillsboro, Ohio	Best Pair Pea Fowls	2 00
E. J. Haskins	Wakeman, Ohio	2nd best pair Pea Fowls.	1 00
Eugene Sites	Elyria, Ohio	Best Pair Ring Neck Pheasants	2 00
Eugene Sites	Elyria, Ohio	Best Pair Silver Pheasants	2 00
Eugene Sites	Elyria, Ohio	Best Pair Golden Pheasants	2 00
S. E. Wurst	Elyria, Ohio	Best Pair Silkies	1 50
Eugene Sites	Elyria, Ohio	2nd best Pair Silkies	75

PIGEONS.

S. E. Wurst	Elyria, Ohio	Best collection of 5 varieties	5 00
S. E. Wurst	Elyria, Ohio	2nd best collection of 5 varieties	3 00

CLASS COLLECTIONS.

Chas. McClave	New London, Ohio	Best American Class	3 00
Eugene Sites	Elyria, Ohio	2nd best American Class.	2 00
Jas. A. Tucker	Concord, Mich	Best Asiatic Class	3 00
Chas. McClave	New London, Ohio	2nd best Asiatic Class	2 00
Chas. McClave	New London, Ohio	Best Mediterranean Class	3 00
Armbrust Bros	Armbrust, Pa	2nd best	2 00
Jas. A. Tucker	Concord, Mich	Best Polish Class	3 00
Armbrust Bros	Armbrust, Pa	2nd best Polish Class	2 00
Armbrust Bros	Armbrust, Pa	Best Hamburg Class	3 00
E. J. Haskins	Wakeman, Ohio	2nd best Hamburg Class.	2 00
Armbrust Bros	Armbrust, Pa	Best Games and Game Bantams	3 00
S. E. Wurst	Elyria, Ohio	2nd best Games and Game Bantams	2 00
Armbrust Bros	Armbrust, Pa	Best Bantams, not Game	3 00
Jas. A. Tucker	Concord, Mich	2nd best Bantams, not Game	2 00
Chas. McClave	New London, Ohio	Best Turkeys	3 00
S. E. Wurst	Elyria, Ohio	2nd best Turkeys	2 00
Chas. McClave	New London, Ohio	Best Geese	3 00
E. J. Haskins	Wakeman, Ohio	2nd best Geese	2 00
E. J. Haskins	Wakeman, Ohio	Best Ducks	3 00
Chas. McClave	New London, Ohio	2nd best Ducks	2 00
Ohio Incubator & Brooder Co	Columbus, Ohio	Best incubator in operation	Medal.
Manson-Campbell Co	Chatham, Ontario, Can	Best brooder in operation	Medal.

SIXTH DEPARTMENT—FARM PRODUCTS.

WM. MILLER, Member in Charge.

GRAINS, SEEDS, TOBACCO AND CEREAL MILL PRODUCTS.

Owner's Name and Postoffice.	Name of Article.	Amount.
	White Wheat—Smooth.	
J. L. Keckley, Marysville, O.	Best peck Early White Leader	$2 00
Albert Pearce, North Ridgeville, O.	2d best peck Early White Leader	1 00
J. L. Keckley, Marysville, O.	Best peck International No. 6	2 00
J. L. Keckley, Marysville, O.	Best peck Gold Coin	2 00
Albert Pearce, North Ridgeville, O.	2d Best peck Gold Coin	1 00
F. M. Whipps, Byhalia, O.	Best peck Royal Australian	2 00
J. L. Keckley, Marysville, O.	2d best peck Royal Australian	1 00
F. M. Whipps, Byhalia, O.	Best peck Danson's Golden Chaff	2 00
J. L. Keckley, Marysville, O.	Best peck any other variety	2 00
	White Wheats—Bearded	
F. M. Whipps, Byhalia, O.	Best peck Democrat	2 00
J. L. Keckley, Marysville, O.	2d best peck Democrat	1 00
F. M. Whipps, Byhalia, O.	Best peck any other variety	2 00
	Red Wheats—Smooth.	
J. L. Keckley, Marysville, O.	Best peck Poole	2 00
Albert Pearce, North Ridgeville, O.	2d best peck Poole	1 00
F. M. Whipps, Byhalia, O.	Best peck Mealy	2 00
F. M. Whipps, Byhalia, O.	2d best peck Mealy	1 00
F. M. Whipps, Byhalia, O.	Best peck Red Russian	2 00
Albert Pearce, North Ridgeville, O.	2d best peck Red Russian	1 00
J. L. Keckley, Marysville, O.	Best peck Early Ripe	2 00
F. M. Whipps, Byhalia, O.	2d best peck Early Ripe	1 00
J. L. Keckley, Marysville, O.	Best peck Fultz	2 00
Albert Pearce, North Ridgeville, O.	2d best peck Fultz	1 00
J. L. Keckley, Marysville, O.	Best peck any other variety	2 00
Albert Pearce, North Ridgeville, O.	2d best peck any other variety	1 00
	Red Wheats—Bearded.	
Albert Pearce, North Ridgeville, O.	Best peck Valley	2 00
E. G. Stockman, Prospect, O.	2d best peck Valley	1 00
Albert Pearce, North Ridgeville, O.	Best peck Velvet Chaff (Penquits)	2 00
J. L. Keckley, Marysville, O.	2d best peck Velvet Chaff (Penquits)	1 00
J. L. Keckley, Marysville, O.	Best peck Red Cross	2 00
Albert Pearce, North Ridgeville, O.	2d best peck Red Cross	1 00
J. L. Keckley, Marysville, O.	Best peck Egyptian	2 00
Albert Pearce, North Ridgeville, O.	2d best peck Egyptian	1 00
J. L. Keckley, Marysville, O.	Best peck Nigger	2 00
I. B. Keckley, Marysville, O.	2d best peck Nigger	1 00
F. M. Whipps, Byhalia, O.	Best peck Mediterranean	2 00
J. L. Keckley, Marysville, O.	2d best peck Mediterranean	1 00
J. L. Keckley, Marysville, O.	Best peck any other variety	2 00
F. M. Whipps, Byhalia, O.	2d best peck any other variety	1 00
	White Oats.	
I. B. Keckley, Marysville, O.	Best peck Welcome	1 50
J. L. Keckley, Marysville, O.	2d best peck Welcome	75
J. L. Keckley, Marysville, O.	Best peck Lincoln	1 50
I. B. Keckley, Marysville, O.	2d best peck Lincoln	75
J. L. Keckley, Marysville, O.	Best peck Improved American	1 50
Albert Pearce, North Ridgeville, O.	2d best peck Improved American	75
J. L. Keckley, Marysville, O.	Best peck White Belgian	1 50
F. M. Whipps, Byhalia, O.	2d best peck White Belgian	75
F. M. Whipps, Byhalia, O.	Best peck Clydesdale	1 50
J. L. Keckley, Marysville, O.	2d best peck Clydesdale	75
J. L. Keckley, Marysville, O.	Best peck Banner	1 50
F. M. Whipps, Byhalia, O.	2d best peck Banner	75

FARM PRODUCTS—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
	Black Oats, Barley, Rye, Etc.	
I. B. Keckley, Marysville, O.	Best peck Black Tartarian Oats	$1 50
J. L. Keckley, Marysville, O.	2d best peck Black Tartarian Oats	75
F. M. Whipps, Byhalia, O.	Best Peck Black Russian Oats	1 50
J. L. Keckley, Marysville, O.	2d best peck Black Russian Oats	75
Albert Pearce, North Ridgeville, O.	Best peck Monarch Oats	1 50
J. L. Keckley, Marysville, O.	2d best peck Monarch Oats	75
E. G. Stockman, Prospect, O.	Best peck Winter Rye	2 00
J. L. Keckley, Marysville, O.	2d best peck Winter Rye	1 00
J. L. Keckley, Marysville, O.	Best peck Beardless Fall Barley	2 00
Albert Pearce, North Ridgeville, O.	2d best peck Beardless Fall Barley	1 00
Harry Leibold, Delaware, O.	Best peck Spring Barley	2 00
F. M. Whipps, Byhalia, O.	2d best peck Spring Barley	1 00
J. L. Keckley, Marysville, O.	Best peck Silver Hull Buckwheat	1 50
F. M. Whipps, Byhalia, O.	2d best peck Silver Hull Buckwheat	75
Harry Leibold, Delaware, O.	Best peck Japanese Buckwheat	1 50
I. B. Keckley, Marysville, O.	2d best peck Japanese Buckwheat	75
Albert Pearce, North Ridgeville, O.	Best peck Spelt	1 50
F. M. Whipps, Byhalia, O.	Best peck Common Flax Seed	2 00
J. L. Keckley, Marysville, O.	2d best peck Common Flax Seed	1 00
J. L. Keckley, Marysville, O.	Best two quarts Canada Field Peas	1 50
F. W. Whipps, Byhalia, O.	2d best two quarts Canada Field Peas	75
F. M. Whipps, Byhalia, O.	Best two quarts Marrow Fat Field Peas	1 50
J. L. Keckley, Marysville, O.	2d best two quarts Marrow Fat Field Peas	75
	Grass Seeds	
J. L. Keckley, Marysville, O.	Best peck Timothy	2 00
F. M. Whipps, Byhalia, O.	2d best peck Timothy	1 00
M. J. & C. E. Leavitt, Mechanicsburg, O.	Best peck Kentucky Blue Grass	2 00
F. M. Whipps, Byhalia, O.	2d best peck Kentucky Blue Brass	1 00
J. L. Keckley, Marysville, O.	Best Peck Orchard	2 00
Albert Pearce, North Ridgeville, O.	2d best peck Orchard	1 00
J. L. Keckley, Marysville, O.	Best peck Red Top	2 00
Harry Leibold, Delaware, O.	2d best peck Red Top	1 00
F. M. Whipps, Byhalia, O.	Best peck German Millet	2 00
I. B. Keckley, Marysville, O.	2d best peck German Millet	1 00
J. L. Keckley, Marysville, O.	Best peck Hungarian Grass	2 00
F. M. Whipps, Byhalia, O.	2d best peck Hungarian Grass	1 00
	Clover Seed	
F. M. Whipps, Byhalia, O.	Best peck Mammoth Red	2 00
Albert Pearce, North Ridgeville, O.	2d best peck Mammoth Red	1 00
F. M. Whipps, Byhalia, O.	Best peck Common Red	2 00
M. J. & C. E. Leavitt, Mechanicsburg, O.	Best peck Alsike	2 00
J. L. Keckley, Marysville, O.	2d best peck Alsike	1 00
Albert Pearce, North Ridgeville, O.	Best peck Crimson	2 00
Harry Leibold, Delaware, O.	2d best peck Crimson	1 00
J. L. Keckley, Marysville, O.	Best peck Alfalfa	2 00
Albert Pearce, North Ridgeville, O.	2d best peck Alfalfa	1 00
	Displays.	
J. L. Keckley, Marysville, O.	Best display of grain in straw and threshed	8 00
Albert Pearce, North Ridgeville, O.	2d best	4 00
J. L. Keckley, Marysville, O.	Best display grasses, including clover and sedges	5 00
F. M. Whipps, Byhalia, O.	2d best	3 00
	Tobacco	
F. M. Whipps, Byhalia, O.	Best four hands, Ohio Seed Leaf	2 00
F. M. Whipps, Byhalia, O.	Best four hands, White Burley	2 00
	Corn.	
I. B. Keckley, Marysville, O.	Best twelve ears yellow field corn	3 00
J. L. Keckley, Marysville, O.	2d best twelve ears yellow field corn	2 00
J. L. Keckley, Marysville, O.	Best twelve ears white field corn	3 00
I. B. Keckley, Marysville, O.	2d best twelve ears white field corn	2 00
J. L. Keckley, Marysville O	Best twelve ears yellow flint corn	2 00
I. B. Keckley, Marysville, O.	2d best twelve ears yellow flint corn	1 00
J. L. Keckley, Marysville, O.	Best twelve ears white flint corn	2 00
I. B. Keckley, Marysville, O.	2d best twelve ears white flint corn	1 00
M. J. & C. E. Leavitt, Mechanicsburg, O.	Best twelve ears white pop corn	2 00
J. L. Keckley, Marysville, O.	2d best twelve ears white pop corn	1 00
I. B. Keckley, Marysville, O.	Best twelve ears golden pop corn	2 00
J. L. Keckley, Marysville, O.	2d best twelve ears golden pop corn	1 00
J. L. Keckley, Marysville, O.	Best display of white field corn	8 00
I. B. Keckley, Marysville, O.	2d best display of white field corn	4 00
J. L. Keckley, Marysville, O.	Best display of yellow field corn	8 00

FARM PRODUCTS—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
	Corn.	
I. B. Keckley, Marysville, O.	2d best display of yellow field corn	$4 00
A. H. Powell, Newark, O.	Best display and variety of sweet corn	3 00
J. L. Keckley, Marysville, O.	Best display and variety of pop corn	3 00
F. M. Whipps, Byhalia, O.	2d best display and variety of pop corn	2 00
A. H. Powell, Newark, O.	Best display and variety of corn on stalk	6 00
J. L. Keckley, Marysville, O.	2d best display and variety of corn on stalk	3 00
F. M. Whipps, Byhalia, O.	Best twenty pounds of broom corn	2 00
	Potatoes and Roots.	
J. L. Keckley, Marysville, O.	Best peck of Banner	1 50
Alex Wilson, Newark, O.	2d best peck of Banner	75
Alex Wilson, Newark, O.	Best peck of Beauty of Hebron	1 50
M. J. & C. E. Leavitt, Mechanicsburg, O.	2d best peck of Beauty of Hebron	75
J. L. Keckley, Marysville, O.	Best peck of Bliss Triumph	1 50
Hilas E. Craig, Canal Winchester, O.	2d best peck of Bliss Triumph	75
J. L. Keckley, Marysville, O.	Best peck of Burpee's Early	1 50
F. M. Whipps, Byhalia, O.	2d best peck of Burpee's Early	75
J. L. Keckley, Marysville, O.	Best peck of Bovee	1 50
F. J. Coburn, Mechanicsburg, O.	2d best peck of Bovee	75
J. L. Keckley, Marysville, O.	Best peck of Carman No. 3	1 50
Alex Wilson, Newark, O.	2d best peck of Carman No. 3	75
J. L. Keckley, Marysville, O.	Best peck of Early Ohio	1 50
F. M. Whipps, Byhalia, O.	2d best peck of Early Ohio	75
J. L. Keckley, Marysville, O.	Best peck of Early Norther	1 50
F. M. Whipps, Byhalia, O.	2d best peck of Early Norther	75
F. J. Coburn, Mechanicsburg, O.	Best peck of Early Pride	1 50
F. M. Whipps, Byhalia, O.	2d best peck of Early Pride	75
F. M. Whipps, Byhalia, O.	Best peck of Early Rose	1 50
Geo. T. Bitler, Canal Winchester, O.	2d best peck of early Rose	75
C. W. Kent, Newark, O.	Best peck of Early Puritan	1 50
Alex Wilson, Newark, O.	2d best peck of Early Puritan	75
J. L. Keckley, Marysville, O.	Best peck of Early Trumbull	1 50
Alex Wilson, Newark, O.	2d best peck of Early Trumbull	75
Alex Wilson, Newark, O.	Best peck of Enormous	1 50
J. L. Keckley, Marysville, O.	2d best peck of Enormous	75
M. J. & C. E. Leavitt Mechanicsburg, O.	Best peck of Early Thouroughbred	1 50
J. L. Keckley, Marysville, O.	2d best peck of Early Thouroughbred	75
M. J. & C. E. Leavitt, Mechanicsburg, O.	Best peck of Early Six Weeks	1 50
Geo. T. Bitler, Canal Winchester, O.	2d best peck of Early Six Weeks	75
M. J. & C. E. Leavitt, Mechanicsburg, O.	Best peck of Early Michigan	1 50
C. W. Kent, Newark, O.	2d best peck of Early Michigan	75
Alex Wilson, Newark, O.	Best peck of Green Mountain	1 50
J. L. Keckley, Marysville, O.	2d best peck of Green Mountain	75
M. J. & C. E. Leavitt, Mechanicsburg, O.	Best peck of Irish Cobbler	1 50
J. L. Keckley, Marysville, O.	2d best peck of Irish Cobbler	75
F. M. Whipps, Byhalia, O.	Best peck of Maggie Murphy	1 50
J. L. Keckley, Marysville, O.	2d best peck of Maggie Murphy	75
J. L. Keckley, Marysville, O.	Best peck of Livingston	1 50
A. H. Powell, Newark, O.	2d best peck of Livingston	75
M. J. & C. E. Leavitt, Mechanicsburg, O.	Best peck of New Queen	1 50
J. L. Keckley, Marysville, O.	2d best peck of New Queen	75
Hilas E. Craig, Canal Winchester, O.	Best peck of Red Seneca Beauty	1 50
J. L. Keckley, Marysville, O.	2d best peck of Red Seneca Beauty	75
J. L. Keckley, Marysville, O.	Best peck of Rural New Yorker No. 2	1 50
F. M. Whipps, Byhalia, O.	2d best peck of Rural New Yorker No. 2	75
J. L. Keckley, Marysville, O.	Best peck of Sir Walter Raleigh	1 50
Alex Wilson, Newark, O.	2d best peck of Sir Walter Raleigh	75
Alex Wilson, Newark, O.	Best peck of Uncle Sam	1 50
C. W. Kent, Newark, O.	2d best peck of Uncle Sam	75
J. L. Keckley, Marysville, O.	Best peck of Vaughan	1 50
F. M. Whipps, Byhalia, O.	2d best peck of Vaughan	75
F. M. Whipps, Byhalia, O.	Best peck of White Mountain	1 50
J. L. Keckley, Marysville, O.	2d best peck of White Mountain	75
Alex Wilson, Newark, O.	Best peck of Whitson's White Mammoth	1 50
J. L. Keckley, Marysville, O.	2d best peck of Whitson's White Mammoth	75
J. L. Keckley, Marysville, O.	Best peck of World's Fair	1 50
F. M. Whipps, Byhalia, O.	2d best peck of World's Fair	75
J. L. Keckley, Marysville, O	Best display of twenty-five varieties of Irish Potatoes	15 00
Alex Wilson, Newark, O.	2d best	8 00
Hilas E. Craig, Canal Winchester, O.	Best peck of yellow sweet potatoes	1 50
Geo. T. Bitler, Canal Winchester, O.	2d best peck of yellow sweet potatoes	75
A. H. Powell, Newark, O.	Best peck of red sweet potatoes	1 50
Geo. T. Bitler, Canal Winchester, O.	2d best peck of red sweet potatoes	75
Hilas E. Craig, Canal Winchester, O.	Best peck of white sweet potatoes	1 50
A. J. Trumbo & Son, Hanging Rock, O.	2d best peck of white sweet potatoes	75
A. H. Powell, Newark, O.	Best peck of red yams	1 50
Hilas E. Craig, Canal Winchester, O.	2d best peck of red yams	75
A. J. Trumbo & Son, Hanging Rock, O.	Best peck of white yams	1 50
A. H. Powell, Newark, O.	2d best peck of white yams	75

FARM PRODUCTS—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
	Potatoes and Roots.	
Geo. T. Bitler, Canal Winchester, O	Best display of sweet potatoes and yams	$4 00
Albert Pearce, North Ridgeville, O	2d best display of sweet potatoes and yams	2 00
A. H. Powell, Newark, O	Best twelve long orange carrots	1 50
C. W. Kent, Newark, O	2d best twelve long orange carrots	75
A. H. Powell, Newark, O	Best twelve Danver's carrots	1 50
F. M. Whipps, Byhalia, O	2d best twelve Danver's carrots	75
A. H. Powell, Newark, O	Best twelve Oxheart carrots	1 50
C. W. Kent, Newark, O	2d best twelve Oxheart carrots	75
J. L. Keckley, Marysville, O	Best twelve White Belgian carrots	1 50
A. H. Powell, Newark, O	2d best twelve White Belgian carrots	75
A. H. Powell, Newark, O	Best display of carrots	3 00
G. W. Wildman, Springfield, O	2d best display of carrots	2 00
C. W. Kent, Newark, O	Best twelve parsnips	1 50
F. M. Whipps, Byhalia, O	2d best twelve parsnips	75
J. L. Keckley, Marysville, O	Best twelve Salsify roots	1 50
C. W. Kent, Newark, O	2d best twelve Salsify roots	75
C. W. Kent, Newark, O	Best six Eclipse beets	1 50
F. M. Whipps, Byhalia, O	2d best six Eclispe beets	75
C. W. Kent, Newark, O	Best six Columbian beets	1 50
J. L. Keckley, Marysville, O	2d best six Columbian beets	75
C. W. Kent, Newark, O	Best six Egyptian beets	1 50
F. M. Whipps, Byhalia, O	2d best six Egyptian beets	75
J. L. Keckley, Marysville, O	Best six Dark Blood Turnip beets	1 50
C. W. Kent, Newark, O	2d best six Dark Blood Turnip beets	75
J. L. Keckley, Marysville, O	Best six Long Blood beets	1 50
Albert Pearce, North Ridgeville, O	2d best six Long Blood beets	75
A. H. Powell, Newark, O	Best two varieties of Sugar beets	1 50
J. L. Keckley, Marysville, O	2d best two varieties of Sugar beets	75
C. W. Kent, Newark, O	Best three long red Mangel Wurzel beets	1 50
J. L. Keckley, Marysville, O	2d best three long red Mangel Wurzel beets	75
J. L. Keckley, Marysville, O	Best three long yellow Mangel Wurzel beets	1 50
C. W. Kent, Newark, O	2d best	75
A. H. Powell, Newark, O	Best three Golden Tankard beets	1 50
J. L. Keckley, Marysville, O	2d best three Golden Tankard beets	75
A. H. Powell, Newark, O	Best three Red Globe beets	1 50
J. L. Keckley, Marysville, O	2d best three Red Globe beets	75
A. H. Powell, Newark, O	Best three Yellow Globe beets	1 50
J. L. Keckley, Marysville, O	2d best three Yellow Globe beets	75
A. H. Powell, Newark, O	Best display of twelve varieties of beets	4 00
C. W. Kent, Newark, O	2d best display of twelve varieties of beets	2 00
C. W. Kent, Newark, O	Best display of beets and turnips	4 00
J. L. Keckley, Marysville, O	2d best display of beets and turnips	2 00
J. L.. Keckley, Marysville O	Best six purple Kohlrabi	1 50
Albert Pearce, North Ridgeville, O	2d best six purple Kohlrabi	75
M. J. & C. E. Leavitt, Mechanicsburg, O	Best six white Kohlrabi	1 50
G. W. Wildman, Springfield, O	2d best six white Kohlrabi	75
M. J. & C. E. Leavitt, Mechanicsburg, O	Best six Rutabagas	1 50
Albert Pearce, North Ridgeville, O	2d best six Rutabagas	75
A. H. Powell, Newark, O	Best peck of Purple Top turnips	1 50
G. W. Wildman, Springfield, O	2d best peck of Purple Top turnips	75
A. H. Powell, Newark. O	Best peck of White Top turnips	1 50
G. W. Wildman, Springfield, O	2d best peck of White Top turnips	75
J. L. Keckley, Marysville, O	Best peck of Red Globe onions	1 50
M. J. & C. E. Leavitts, Mechanicsburg, O	2d best peck of Red Globe onions	75
A. H. Powell, Newark, O	Best peck of White Globe onions	1 50
J. L. Keckley, Marysville, O	2d best peck of White Globe onions	75
J. L. Keckley, Marysville, O	Best peck of Yellow Globe Danver's onions	1 50
F. M. Whipps, Byhalia, O	2d best	75
A. H. Powell, Newark, O	Best peck of Red Wethersfield onions	1 50
J. L. Keckley, Marysville, O	2d best peck of Red Wethersfield onions	75
A. H. Powell, Newark, O	Best peck of Red Rocca onions	1 50
J. L. Keckley, Marysville, O	Best peck of Prizetaker onions	1 50
G. W. Wildman, Springfield, O	2d Best peck of Prizetaker onions	75
Albert Pearce, North Ridgeville, O	Best peck of Potato onions	1 50
Alex Wilson, Newark, O	2d best peck of Potato onions	75
Alex Wilson, Newark, O	Best display of onions, ten varieties	5 00
C. W. Kent, Newark, O	2d best display of onions, ten varieties	3 00
	Vegetables.	
A. H. Powell, Newark, O	Best peck of Acme tomatoes	1 50
C. W. Kent, Newark, O	2d best peck of Acme tomatoes	75
A. H. Powell, Newark, O	Best peck of Aristocrat tomatoes	1 50
C. W. Kent, Newark, O	2d best peck of Aristocrat tomatoes	75
G. W. Wildman, Springfield, O	Best peck of Buckeye State tomatoes	1 50
A. H. Powell, Newark, O	2d best peck of Buckeye State tomatoes	75
Alex. Wilson, Newark, O	Best peck of Beauty tomatoes	1 50
G. W. Wildman, Springfield, O	2d best peck of Beauty tomatoes	75
A. H. Powell, Newark, O	Best peck of Dwarf Champion tomatoes	1 50
Alex Wilson, Newark, O	2d best peck of Dwarf Champion tomatoes	75

FARM PRODUCTS—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
	Vegetables.	
A. H. Powell, Newark, O.	Best peck of Favorite tomatoes	$1 50
C. W. Kent, Newark, O	2d best peck of Favorite tomatoes	75
C. W. Kent, Newark, O	Best peck of Golden Queen tomatoes	1 50
A. H. Powell, Newark, O	2d best peck of Golden Queen tomatoes	75
Alex Wilson, Newark, O	Best peck of Honor Bright tomatoes	1 50
A. H. Powell, Newark, O	2d best peck of Honor Bright tomatoes	75
Alex Wilson, Newark, O	Best peck of Royal Red tomatoes	1 50
C. W. Kent, Newark, O	2d best peck of Royal Red tomatoes	75
A. H. Powell, Newark, O	Best peck of Perfection tomatoes	1 50
Alex Wilson, Newark, O	2d best peck of Perfection tomatoes	75
F. C. McVay, Columbus, O	Best peck of Ponderosa tomatoes	1 50
A. H. Powell, Newark, O	2d best peck of Ponderosa tomatoes	75
Alex Wilson, Newark, O	Best peck of Stone tomatoes	1 50
A. H. Powell, Newark, O	2d best peck of Stone tomatoes	75
A. H. Powell, Newark, O	Best peck of Spark's Earliest tomatoes	1 50
Alex Wilson, Newark, O	2d best peck of Spark's Earliest tomatoes	75
G. W. Wildman, Springfield, O	Best peck of Magnus tomatoes	1 50
A. H. Powell, Newark, O	2d best peck of Magnus tomatoes	75
A. H. Powell, Newark, O	Best peck of Enormous tomatoes	1 50
C. W. Kent, Newark, O	2d best peck of Enormous tomatoes	75
A. H. Powell, Newark, O	Best display of tomatoes, ten varieties	5 00
Alex Wilson, Newark, O	2d best display of tomatoes, ten varieties	3 00
J. L. Keckley, Marysville, O	Best three heads of All Seasons cabbage	1 50
A. H. Powell, Newark, O	2d best three heads of All Seasons cabbage	75
C. W. Kent, Newark, O	Best three heads of Autumn King cabbage	1 50
J. L. Keckley, Marysville, O	2d best	75
A. H. Powell, Newark, O	Best three heads of Surehead cabbage	1 50
G. W. Wildman, Springfield, O	2d best three heads of Surehead cabbage	75
C. W. Kent, Newark, O	Best three heads of Flat Dutch cabbage	1 50
F. M. Whipps, Byhalia, O	2d best three heads of Flat Dutch cabbage	75
A. H. Powell, Newark, O	Best three heads of Drumhead cabbage	1 50
C. W. Kent, Newark, O	2d best three heads of Drumhead cabbage	75
A. H. Powell, Newark, O	Best three heads of Red Dutch cabbage	1 50
M. J. & C. E. Leavitt, Mechanicsburg, O	2d best three heads of Red Dutch cabbage	75
G. W. Wildman, Springfield, O	Best three heads of Winninstadt cabbage	1 50
Albert Pearce, North Ridgeville, O	2d best three heads of Winninstadt cabbage.	75
A. H. Powell, Newark, O	Best three heads of Early Summer cabbage	1 50
C. W. Kent, Newark, O	2d best three heads Early Summer cabbage	75
J. L. Keckley, Marysville, O	Heaviest head of cabbage	1 50
A. H. Powell, Newark. O	2d heaviest head of cabbage	75
Albert Pearce, North Ridgeville, O	Best six stalks of White Plume Celery	1 50
F. M. Whipps, Byhalia, O	2d best six stalks of White Plume celery	75
F. M. Whipps, Byhalia, O	Best six stalks of Golden Self-Bleaching celery	1 50
Albert Pearce, North Ridgeville, O	2d best	75
Albert Pearce, North Ridgeville, O	Best six stalks of Giant Pascal celery	1 50
F. M. Whipps, Byhalia, O	2d best six stalks of Giant Pascal celery	75
C. W. Kent, Newark, O	Best display of celery, five varieties	3 00
A. H. Powell, Newark, O	Best twelve largest peppers	1 50
C. W. Kent, Newark, O	2d best twelve largest peppers	75
Hilas E. Craig, Canal Winchester, O	Best three Boston Marrow squashes	1 50
A. H. Powell, Newark. O	2d best three Boston Marrow squashes	75
Geo. T. Bitler, Canal Winchester, O	Best three Cushaw squashes	1 50
Hilas E Craig, Canal Winchester, O	2d best three Cushaw squashes	75
A. H. Powell, Newark, O	Best three Essex Hybrid squashes	1 50
Hilas E. Craig, Canal Winchester, O	2d best three Essex Hybrid squashes	75
C. W. Kent, Newark, O	Best three Marblehead squashes	1 50
A. H. Powell, Newark, O	2d best three Marblehead squashes	75
F. M. Whipps, Byhalia, O	Best three Hubbard squashes	1 50
Geo. T. Bitler. Canal Winchester	2d best three Hubbard squashes	75
Hilas E. Craig, Canal Winchester, O	Best three Red Hudbard squashes	1 50
Geo. T. Bitler, Canal Winchester, O	2d best three Red Hubbard squashes	75
A. H. Powell, Newark, O	Best three Yellow Crookneck squashes	1 50
C. W. Kent, Newark, O	2d best three Yellow Crookneck squashes	75
C. W. Kent, Newark, O	Best three Mammoth Chili squashes	1 50
G. W. Wildman Springfield, O	2d best three Mammoth Chili squashes	75
Geo. T. Bitler, Canal Winchester, O	Best three Yellow Scallop squashes	1 50
Hilas E. Craig, Canal Winchester, O	2d best three Yellow Scallop squashes	75
A. H. Powell, Newark, O	Best heaviest squash	2 00
G. W. Wildman, Springfield, O	2d best heaviest squash	1 00
Hilas E. Craig, Canal Winchester, O	Best display of squashes	5 00
G. W. Purdam, Hilliards, O	2d best display of squashes	3 00
Hilas E. Craig, Canal Winchester, O	Best three Yellow Field pumpkins	2 00
Geo. T. Bitler, Canal Winchester, O	2d best three Yellow Field pumpkins	1 00
A. H. Powell, Newark, O	Best three Sweet or Pie pumpkins	2 00
Geo. T. Bitler, Canal Winchester, O	2d best three Sweet or Pie pumpkins.	1 00
A. H. Powell, Newark, O	Best heaviest pumpkin	2 00
G. W. Wildman, Springfield, O	2d best heaviest pumpkin	1 00
Hilas E. Craig, Canal Winchester, O	Best three Black Diamond watermelons	2 00
Geo. T. Bitler, Canal Winchester, O	2d best three Black Diamond watermelons	1 00
Hilas E. Craig, Canal Winchester, O	Best three Kolb's Gem watermelons	2 00
F. M. Whipps, Byhalia, O	2d best three Kolb's Gem watermelons	1 00

FARM PRODUCTS—Continued.

Owner's Name and Postoffice.	Name of Articles.	Amount.
	Vegetables.	
A. H. Powell, Newark, O.	Best three Ice Cream watermelons	$2 00
Alex Wilson, Newark, O.	2d best three Ice Cream watermelons	1 00
Hilas E. Craig, Canal Winchester, O.	Best three Sweetheart watermelons	2 00
Geo. T. Bitler, Canal Winchester, O.	2d best three Sweetheart watermelons	1 00
Alex Wilson, Newark, O.	Best three Nabob watermelons	2 00
A. H. Powell, Newark, O	2d best three Nabob watermelons	1 00
G. W. Wildman, Springfield, O.	Best three Phinney's Early watermelons	2 00
A. H. Powell, Newark, O.	2d best three Phinney's Early watermelons	1 00
A. H. Powell, Newark, O.	Best three Hoosier King watermelons	2 00
A. H. Powell, Newark, O.	Best three Rattlesnake watermelons	2 00
Hilas E. Craig, Canal Winchester, O	2d best three Rattlesnake watermelons	1 00
Alex Wilson, Newark, O.	Best three Kleckley's Sweet watermelons	2 00
A. H. Powell, Newark, O.	2d best three Kleckley's Sweet watermelons.	1 00
Hilas E. Craig, Canal Winchester, O.	Best three Boss watermelons	2 00
Geo. T. Bitler, Canal Winchester, O.	2d best three Boss watermelons	1 00
A. H. Powell, Newark, O.	Best three Dark Icing watermelons	2 00
Alex Wilson, Newark, O.	2d best three Dark Icing watermelons	1 00
G. W. Wildman, Springfield, O.	Best three Citron watermelons	2 00
A. H. Powell, Newark, O.	2d best three Citron watermelons	1 00
Hilas E. Craig, Canal Winchester, O.	Best heaviest watermelon	2 00
Geo. T. Bitler, Canal Winchester, O.	2d best heaviest watermelon	1 00
G. W. Wildman, Springfield, O.	Best three Osage muskmelons	1 50
C. W. Kent, Newark, O.	2d best three Osage muskmelons	75
A. H. Powell, Newark, O.	Best three Montreal muskmelons	1 50
Geo. T. Bitler, Canal Winchester, O.	2d best three Montreal muskmelons	75
C. W. Kent, Newark, O.	Best three Rose Gem muskmelons	1 50
A. H. Powell, Newark, O.	2d best three Rose Gem muskmelons	75
G. W. Wildman, Springfield, O.	Best three Bay View muskmelons	1 50
Alex Wilson, Newark, O.	2d best three Bay View muskmelons	75
A. H. Powell, Newark, O.	Best three Grand Rapids muskmelons	1 50
C. W. Kent, Newark, O.	2d best three Grand Rapids muskmelons	75
Alex Wilson, Newark, O.	Best three Tip Top muskmelons	1 50
C. W. Kent, Newark, O.	2d best three Tip Top muskmelons	75
C. W. Kent, Newark, O.	Best three Hackensack muskmelons	1 50
Geo. T. Bitler, Canal Winchester, O.	2d best three Hackensack muskmelons	75
Geo. T. Bitler, Canal Winchester, O.	Best three Emerald Gem muskmelons	1 50
A. H. Powell, Newark, O.	2d best three Emerald Gem muskmelons	75
A. H. Powell, Newark, O.	Best display of muskmelons, ten varieties	5 00
Alex Wilson, Newark, O.	2d best display of muskmelons, ten varieties	3 00
Hilas E. Craig, Canal Winchester, O.	Best twelve cucumbers	1 00
C. W. Kent, Newark, O.	2d best twelve cucumbers	50
A. H. Powell, Newark, O.	Best three purple egg plant fruits	1 00
C. W. Kent, Newark, O.	2d best three purple egg plant fruits	50
F. M. Whipps, Byhalia, O.	Best twelve ears early sweet corn crop of 1903	1 00
Albert Pearce, North Ridgeville, O.	2d best	50
Albert Pearce, North Ridgeville, O.	Best twelve ears late sweet corn, crop of 1903	1 00
F. M. Whipps, Byhalia, O.	2d best	50
Hilas E. Craig, Canal Winchester, O.	Best two quarts of Lima beans	1 00
F. M. Whipps, Byhalia, O.	2d best two quarts of Lima beans	50
M. J. & C. E. Leavitt, Mechanicsburg, O.	Best two quarts of Marrow Fat beans	1 00
J. L. Keckley, Marysville, O.	2d best two quarts of Marrow Fat beans	50
M. J. & C. E. Leavitt Mechanicsburg, O.	Best two quarts of Navy beans	1 00
J. L. Keckley, Marysville, O.	2d best two quarts of Navy beans	50
Albert Pearce, North Ridgeville, O.	Best two quarts of Golden Wax beans	1 00
J. L. Keckley, Marysville, O.	2d best two quarts of Golden Wax beans	50
F. M. Whipps, Byhalia, O.	Best two quarts of White Kidney beans	1 00
J. L. Keckley, Marysville, O.	2d best two quarts of White Kidney beans.	50
Albert Pearce, North Ridgeville, O.	Best two quarts of Red Kidney beans	1 00
J. L. Keckley, Marysville, O.	2d best two quarts of Red Kidney beans	50
G. W. Wildman, Springfield, O.	Best display of beans, twenty varieties	4 00
J. L. Keckley, Marysville, O.	2d best display of beans, twenty varieties	2 00
Alex Wilson Newark, O.	Best six stalks of Rhubarb	1 00
G. W. Wildman, Springfield, O.	2d best six stalks of Rhubarb	50
J. L. Keckley, Marysville, O.	Best twelve long white radishes	1 00
G. W. Wildman, Springfield, O.	2d best twelve long white radishes	50
A. H. Powell, Newark, O.	Best twelve long red radishes	1 00
C. W. Kent, Newark. O.	2d best twelve long red radishes	50
A. H. Powell, Newark, O.	Best display of vegetables	20 00
Alex Wilson, Newark, O.	2d best display of vegetables	12 00
C. W. Kent, Newark, O.	3d best display of vegetables	8 00
	County Exhibits.	
J. L. Keckley, Marysville, O.	Best representative exhibit of farm products	125 00
G. W. Wildman, Springfield, O.	2d best	110 00
Albert Pearce, North Ridgeville, O.	3d best	80 00
M. J. & C. E. Leavitt, Mechanicsburg, O.	4th best	60 00
Hiram Whipps, Marion, O.	5th best	45 00

FARM PRODUCTS—Concluded.

Owner's Name and Postoffice.	Name of Article.	Amount.
	Home Dairy Butter.	
G. W. Purdam, Hilliards, O.	Best ten pound package	$5 00
Mrs. Henry Bieber, Delaware, O.	2d best ten pound package	3 00
G. W. Purdam, Hilliards, O.	Best five single pound prints	5 00
Mrs. Henry Bieber, Delaware, O.	2d best five single pound prints	3 00
	Creamery Butter.	
Galena Creamery Co., Galena, O.	Best fifty pound tub	10 00
W. T. S. Bray, Reynoldsburg, O.	2d pest fifty pound tub	5 00
Galena Creamery Co., Galena, O.	Best ten single prints	10 00
Walter S. Barrett, Fairview, O.	2d best ten single prints	5 00
McIntosh & Fitzwater, Columbus, O.	Best display of butter	Medal.
	Cheese.	
H. J. Clark, Wellington, O.	Best twenty-five pounds of flat cheese	8 00
E. H. Russell, Wellington, O.	2d best twenty-five pounds of flat cheese	4 00
J. W. Parkinson, Wellington, O.	Best three pounds of Edam cheese	5 00
	Bees and Honey.	
M. J. & C. E. Leavitt, Mechanicsburg, O.	Best display of comb honey	10 00
Jesse Goodrich, Worthington, O.	2d best display of comb honey	5 00
M. J. & C. E. Leavitt, Mechanicsburg, O.	Best case, 24 sections, white clover comb honey	3 00
Jesse Goodrich, Worthington, O.	2d best	2 00
Jesse Goodrich, Worthington, O.	Best case, 24 sections, basswood comb honey	3 00
M. J. & C. E. Leavitt, Mechanicsburg, O.	2d best	2 00
M. J. & C. E. Leavitt, Mechanicsburg, O.	Best case, 24 sections, comb honey from fall flowers	3 00
Jesse Goodrich, Worthington, O.	2d best	2 00
M. J. & C. E. Leavitt, Mechanicsburg, O.	Best twelve pounds of extracted honey	3 00
Jesse Goodrich, Worthington, O.	2d best twelve pounds of extracted honey	2 00
Jesse Goodrich, Worthington, O.	Best display of extracted honey	10 00
M. J. & C. E. Leavitt, Mechanicsburg, O.	2d best display of extracted honey	5 00
Jesse Goodrich, Worthington, O.	Best display of candied honey	5 00
M. J. & C. E. Leavitt, Mechanicsburg, O.	2d best display of candied honey	3 00
Jesse Goodrich, Worthington, O.	Best display of beeswax	2 00
M. J. & C. E. Leavitt, Mechanicsburg, O.	2d best display of beeswax	1 00
M. J. & C. E. Leavitt, Mechanicsburg, O.	Best nucleus of Italian bees	3 00
Chester C. Leavitt, Mechanicsburg, O.	2d best nucleus of Italian bees	2 00
Chester C. Leavitt, Mechanicsburg, O.	Best nucleus of Carniolan bees	3 00
M. J. & C. E. Leavitt, Mechanicsburg, O.	2d best nucleus of Carniolan bees	2 00
Chester C. Leavitt, Mechanicsburg, O.	Best display of comb foundation	2 00
Jessie Goodrich, Worthington, O.	2d best display of comb foundation	1 00
Jesse Goodrich, Worthington, O.	Best, largest and finest display of honey	15 00
M. J. & C. E. Leavitt, Mechanicsburg, O.	2d best, largest and finest display of honey	8 00
	Maple Products.	
Lyman Strong, Huntsburg, O.	Best gallon of maple syrup	3 00
Albert Pearce, North Ridgeville, O.	2d best gallon of maple syrup	2 00
Lyman Strong, Huntsburg, O.	Best three bricks of maple sugar	3 00
F. I. Bartholomew, Middlefield, O.	2d best three bricks of maple sugar	2 00
F. I. Bartholomew, Middlefield, O.	Best design in maple sugar	2 00
Lyman Strong, Huntsburg, O.	2d best design in maple sugar	1 00
Lyman Strong, Huntsburg, O.	Best five pounds of grained maple sugar	3 00
F. I. Bartholomew, Middlefield, O.	2d best five pounds of grained maple sugar	2 00
F. I. Bartholomew, Middlefield, O.	Best display of maple cream	3 00
Lyman Strong, Huntsburg, O.	2d best display of maple cream	2 00
F. I. Bartholomew, Middlefield, O.	Best, largest and most attractive display of maple products from one county	15 00
Leavitt & Hodge, Mechanicsburg, O.	2d best	10 00

SEVENTH DEPARTMENT—HORTICULTURAL PRODUCTS.

WM. MILLER, Member in Charge.

Owner's Name and Postoffice.	Name of Article.	Amount.
	Summer, Fall and Winter Apples.	
U. T. Cox, Rockwood, O	Best three varieties of summer for market	$3 00
E. G. Cox, Rockwood, O	2nd best	1 00
U. T. Cox, Rockwood, O	Best three varieties of fall for market	3 00
W. H. West, Chillicothe, O	2nd best three varieties of fall for market	1 00
E. G. Cox, Rockwood, O	Best six varieties of winter for market	5 00
M. I. Shively, Chillicothe, O	2nd best six varieties of winter for market	3 00
U. T. Cox, Rockwood, O	Best collection of twelve varieties, summer, fall and winter, for market	8 00
E. G. Cox, Rockwood, O	2nd best	5 00
W. T. West, Chillicothe, O	Best one variety of summer for dessert	2 00
U. T. Cox, Rockwood, O	2nd best one variety of summer for dessert	1 00
U. T. Cox, Rockwood, O	Best one variety of winter for dessert	2 00
E. G. Cox, Rockwood, O	2nd best one variety of winter for dessert	1 00
E. G. Cox, Rockwood, O	Best one variety of fall for dessert	2 00
U. T. Cox, Rockwood, O	2nd best one variety of fall for dessert	1 00
E. G. Cox, Rockwood, O	Best collection of six varieties, summer, fall and winter, for dessert and culinary	6 00
J. A. Stokes, Fremont, O	2nd best	3 00
J. B. Stewart, Thornville, O	Best one variety of fall, size and beauty to rule	2 00
A. J. Trumbo & Son, Hanging Rock, O	2nd best	1 00
M. L. Petticord, Republic, O	Best one variety of winter, size and beauty to rule	2 00
U. T. Cox, Rockwood, O	2nd best	1 00
H. L. Persing, Clyde, O	Best collection of six varieties, summer, fall and winter, size and beauty to rule	6 00
E. G. Cox, Rockwood, O	2nd best	3 00
U. T. Cox, Rockwood, O	Best display of twenty-five varieties, summer, fall and winter, dessert, culinary and market qualities to be considered	20 00
E. G. Cox, Rockwood, O	2nd best	10 00
	Plate Apples—Summer and Fall.	
O. C. Stockman, Prospect, O	Best plate of Alexander	1 50
E. G. Stockman, Prospect, O	2nd best	75
U. T. Cox, Rockwood, O	Best plate of Benoni	1 50
W. H. West, Chillicothe, O	2nd best plate of Benoni	75
M. I. Shively, Chillicothe, O	Best plate of Cuyahoga Red Streak	1 50
E. G. Stockman, Prospect, O	2nd best plate of Cuyahoga Red Streak	75
W. H. West, Chillicothe, O	Best plate of Chenango Strawberry	1 50
U. T. Cox, Rockwood, O	2nd best plate of Chenango Strawberry	75
T. S. Johnson, Port Clinton, O	Best plate of Duchess of Oldenburg	1 50
U. T. Cox, Rockwood, O	2nd best plate of Duchess of Oldenburg	75
U. T. Cox, Rockwood, O	Best plate of fall Pippin	1 50
M. I. Shively, Chillicothe, O	2nd best plate of fall Pippin	75
Cary W. Montgomery, Newark, O	Best plate of Gravenstein	1 50
W. W. Farnsworth, Waterville, O	2nd best plate of Gravenstein	75
C. W. Counter, Toledo, O	Best plate of Jeffries	1 50
O. C. Stockman, Prospect, O	2nd best plate of Jeffries	75
U. T. Cox, Rockwood, O	Best plate of Lowell	1 50
E. G. Stockman, Prospect, O	2nd best plate of Lowell	75
U. T. Cox, Rockwood, O	Best plate of Maiden's Blush	1 50
A. J. Trumbo & Son, Hanging Rock, O	2nd best plate of Maiden's Blush	75
T. S. Johnson, Port Clinton, O	Best plate of Ohio Nonpareil	1 50
C. W. Counter, Toledo, O	2nd best plate of Ohio Nonpareil	75
Cary W. Montgomery, Newark, O	Best plate of Porter	1 50
W. H. West, Chillicothe, O	2nd best plate of Porter	75
E. G. Cox, Rockwood, O	Best plate of Red Astrachan	1 50
W. W. Farnsworth, Waterville, O	2nd best plate of Red Astrachan	75
U. T. Cox, Rockwood, O	Best plate of St. Lawrence	1 50
E. G. Cox, Rockwood, O	2nd best plate of St. Lawrence	75
C. W. Counter, Toledo, O	Best plate of Summer Queen	1 50
W. W. Farnsworth, Waterville, O	2nd best plate of Summer Queen	75
T. S. Johnson, Port Clinton, O	Best plate of Sweet Bough	1 50
Jamer E. Carpenter, Republic, O	2nd best plate of Sweet Bough	75
U. T. Cox, Rockwood, O	Best plate of Wealthy	1 50
E. G. Cox, Rockwood, O	2nd best plate of Wealthy	75
James E. Carpenter, Republic, O	Best plate of Yellow Transparent	1 50
U. T. Cox, Rockwood, O	2nd best plate of Yellow Transparent	75

HORTICULTURAL PRODUCTS—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
	Plate Apples—Winter.	
E. G. Stockman, Prospect, O	Best plate of Bailey's Sweet	$1 50
O. C. Stockman, Prospect, O	2nd best plate of Bailey's Sweet	75
R. G. Johnson, Gypsum, O	Best plate of Baltimore	1 50
T. S. Johnson, Port Clinton, O	2nd best plate of Baltimore	75
E. G. Cox, Rockwood, O	Best plate of Baldwin	1 50
M. I. Shively, Chillicothe, O	2nd best plate of Baldwin	75
T. S. Johnson, Port Clinton, O	Best plate of Bellflower Yellow	1 50
U. T. Cox, Rockwood, O	2nd best plate of Bellflower Yellow	75
T. S. Johnson, Port Clinton, O	Best plate of Belmont	1 50
James E. Carpenter, Republic, O	2nd best plate of Belmont	75
Moses Hagler, Xenia, O	Best plate of Ben Davis	1 50
E. G. Cox, Rockwood, O	2nd best plate of Ben Davis	75
M. J. Persing, Clyde, O	Best plate of Dominie	1 50
U. T. Cox, Rockwood, O	Best plate of Fallawater	1 50
M. I. Shively, Chillicothe, O	2nd best plate of Fallawater	75
T. S. Johnson, Port Clinton, O	Best plate of Fameuse	1 50
E. G. Stockman, Prospect, O	2nd best plate of Fameuse	75
W. W. Farnsworth, Waterville, O	Best plate of Greenville	1 50
U. T. Cox, Rockwood, O	Best plate of Grimes' Golden	1 50
E. G. Cox, Rockwood, O	2nd best plate of Grimes' Golden	75
T. S. Johnson, Port Clinton, O	Best plate of Hubbardston	1 50
J. B. Stewart, Thornville, O	2nd best plate of Hubbardston	75
W. W. Farnsworth, Waterville, O	Best plate of Jonathan	1 50
M. I. Shively, Chillicothe, O	2nd best plate of Jonathan	75
M. I. Shively, Chillicothe, O	Best plate of King (Tompkins Co.)	1 50
R. G. Johnson, Gypsum, O	2nd best plate of King (Tompkins Co.)	75
E. G. Stockman, Prospect, O	Best plate of Lawver	1 50
O. C. Stockman, Prospect, O	2nd best plate of Lawver	75
O. C. Stockman, Prospect, O	Best plate of Lady	1 50
E. G. Stockman, Prospect, O	2nd best plate of Lady	75
O. C. Stockman, Prospect, O	Best plate of Limber Twig	1 50
E. G. Stockman, Prospect, O	2nd best plate of Limber Twig	75
C. W. Counter, Toledo, O	Best plate of Morris Red	1 50
W. W. Farnsworth, Waterville, O	2nd best plate of Morris Red	75
E. G. Stockman, Prospect, O	Best plate of Minkler	1 50
M. I. Shively, Chillicothe, O	2nd best plate of Minkler	75
U. T. Cox, Rockwood, O	Best plate of Northern Spy	1 50
E. G. Cox, Rockwood, O	2nd best plate of Northern Spy	75
C. W. Counter, Toledo, O	Best plate of Paradise Winter Sweet	1 50
W. W. Farnsworth, Waterville, O	2nd best plate of Paradise Winter Sweet	75
W. W. Farnsworth, Waterville, O	Best plate of Peck's Pleasant	1 50
E. G. Stockman, Prospect, O	2nd best plate of Peck's Pleasant	75
E. G. Stockman, Prospect, O	Best plate of Pewaukee	1 50
O. C. Stockman, Prospect, O	2nd best plate of Pewaukee	75
U. T. Cox, Rockwood, O	Best plate of Rambo	1 50
M. I. Shively, Chillicothe, O	2nd best plate of Rambo	75
U. T. Cox, Rockwood, O	Best plate of Raule's Janet	1 50
E. G. Cox, Rockwood, O	2nd best plate of Raule's Janet	75
T. S. Johnson, Port Clinton, O	Best plate of Red Canada	1 50
C. W. Counter, Toledo, O	2nd best plate of Red Canada	75
C. W. Counter, Toledo, O	Best plate of Rhode Island Greening	1 50
W. W. Farnsworth, Waterville, O	2nd best plate of Rhode Island Greening	75
E. G. Cox, Rockwood, O	Best plate of Rome Beauty	1 50
U. T. Cox, Rockwood, O	2nd best plate of Rome Beauty	75
T. S. Johnson, Port Clinton, O	Best plate of Roxbury Russett	1 50
E. G. Cox, Rockwood, O	2nd best plate of Roxbury Russet	75
U. T. Cox, Rockwood, O	Best plate of Seek-no-farther	1 50
T. S. Johnson, Port Clinton, O	2nd best plate of Seek-no-farther	75
M. I. Shively, Chillicothe, O	Best plate of Smith's Cider	1 50
E. G. Cox, Rockwood, O	2nd best plate of Smith's Cider	75
W. W. Farnsworth, Waterville, O	Best plate of Smoke House	1 50
E. G. Cox, Rockwood, O	2nd best plate of Smoke House	75
T. S. Johnson, Port Clinton, O	Best plate of Spitzenburg Esopus	1 50
R. G. Johnson, Gypsum, O	2nd best plate of Spitzenburg Esopus	75
O. C. Stockman, Prospect, O	Best plate of Stark	1 50
W. W. Farnsworth, Waterville, O	2nd best plate of Stark	75
O. C. Stockman, Prospect, O	Best plate of Sweet Wine Sap	1 50
T. S. Johnson, Port Clinton, O	2nd best plate of Sweet Wine Sap	75
H. Burkholder, Clyde, O	Best plate of Talman Sweet	1 50
E. G. Stockman, Prospect, O	2nd best plate of Talman Sweet	75
U. T. Cox, Rockwood, O	Best plate of Wagener	1 50
Moses Hagler, Xenia, O	2nd best plate of Wagener	75
U. T. Cox, Rockwood, O	Best plate of White Pippin	1 50
M. I. Shively, Chillicothe, O	2nd best plate of White Pippin	75
E. G. Stockman, Prospect, O	Best plate of Yellow Twig	1 50
O. C. Stockman, Prospect, O	2nd best plate of Yellow Twig	75
M. I. Shively, Chillicothe, O	Best plate of Wine Sap	1 50
Moses Hagler, Xenia, O	2nd best plate of Wine Sap	75
U. T. Cox, Rockwood, O	Best plate of York Imperial	1 50
E. G. Cox, Rockwood, O	2nd best plate of York Imperial	75
E. G. Cox, Rockwood, O	Best plate of New Seedling	1 50
E. G. Stockman, Prospect, O	2nd best plate of New Seedling	75

HORTICULTURAL PRODUCTS—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
	Crab Apples.	
O. C. Stockman, Prospect, O	Best plate of Quaker Beauty	$1 50
E. G. Stockman, Prospect, O	2nd best plate of Quaker Beauty	75
M. I. Shively, Chillicothe, O	Best plate of Hyslop	1 50
E. G. Stockman, Prospect, O	2nd best plate of Hyslop	75
E. M. Woodard, Willoughby, O	Best plate of Transcendent	1 50
M. I. Shively, Chillicothe, O	2nd best plate of Transcendent	75
E. G. Stockman, Prospect, O	Best plate of Whitney's No. 20	1 50
O. C. Stockman, Prospect, O	2nd best plate of Whitney's No. 20	75
O. C. Stockman, Prospect, O	Best display of six varieties	3 00
E. G. Stockman, Prospect, O	2nd best display of six varieties	1 50
	Peaches.	
T. S. Johnson, Port Clinton, O	Best five varieties, dessert and culinary qualities to be considered	3 00
C. W. Counter, Toledo, O	2nd best	2 00
C. W. Counter, Toledo, O	Bets five varieties, market qualities to be considered	3 00
E. G. Cox, Rockwood, O	2nd best	2 00
C. W. Counter, Toledo, O	Best collection of eight varieties, dessert, culinary and market qualities to be considered	4 00
T. S. Johnson, Port Clinton, O	2nd best	2 00
T. S. Johnson, Port Clinton, O	Best collection of twelve varieties, dessert, culinary and market qualities to be considered	8 00
C. W. Counter, Toledo, O	2nd best	5 00
R. G. Johnson, Gypsum, O	Best plate of Beer's Smock	2 00
T. S. Johnson, Port Clinton, O	2nd best plate of Beer's Smock	1 00
T. S. Johnson, Port Clinton, O	Best plate of Briner	2 00
R. G. Johnson, Gypsum, O	2nd best plate of Briner	1 00
U. T. Cox, Rockwood, O	Best plate of Chairs' Choice	2 00
C. W. Counter, Toledo, O	2nd best plate of Chairs' Choice	1 00
W. W. Farnsworth, Waterville, O	Best plate of Carman	2 00
C. W. Counter, Toledo, O	2nd best plate of Carman	1 00
M. L. Petticord, Republic, O	Best plate of Champion	2 00
C. W. Counter, Toledo, O	2nd best plate of Champion	1 00
C. W. Counter, Toledo, O	Best plate of Captain Ede	2 00
W. W. Farnsworth, Waterville, O	2nd best plate of Captain Ede	1 00
W. W. Farnsworth, Waterville, O	Best plate of Crawford's Early	2 00
M. I. Shively, Chillicothe, O	2nd best plate of Crawford's Early	1 00
T. S. Johnson, Port Clinton, O	Best plate of Crawford's Late	2 00
Moses Hagler, Xenia, O	2nd best plate of Crawford's Late	1 00
E. G. Cox, Rockwood, O	Best plate of Crosby	2 00
M. I. Shively, Chillicothe, O	2nd best plate of Crosby	1 00
M. I. Shively, Chillicothe, O	Best plate of Diamond	2 00
E. G. Cox, Rockwood, O	2nd best plate of Diamond	1 00
T. S. Johnson, Port Clinton, O	Best plate of Early Rivers	2 00
R. G. Johnson, Gypsum, O	2nd best plate of Early Rivers	1 00
W. W. Farnsworth, Waterville, O	Best plate of Early Toledo	2 00
C. W. Counter, Toledo, O	2nd best plate of Early Toledo	1 00
W. H. West, Chillicothe, O	Best plate of Elberta	2 00
U. T. Cox, Rockwood, O	2nd best plate of Elberta	1 00
C. W. Counter, Toledo, O	Best plate of Foster	2 00
C. W. Counter, Toledo, O	Best plate of Golden Drop	2 00
W. W. Farnsworth, Waterville, O	2nd best plate of Golden Drop	1 00
T. S. Johnson, Port Clinton, O	Best plate of Hill's Chili	2 00
R. G. Johnson, Gypsum, O	2nd best plate of Hill's Chili	1 00
C. W. Counter, Toledo, O	Best plate of Kalamazoo	2 00
R. G. Johnson, Gypsum, O	Best plate of Lemon Tree	2 00
T. S. Johnson, Port Clinton, O	Best plate of Lemon Cling	2 00
J. B. Stewart, Thornville, O	2nd best plate of Lemon Cling	1 00
C. W. Counter, Toledo, O	Best plate of Lewis' Seedling	2 00
W. W. Farnsworth, Waterville, O	2nd best plate of Lewis' Seedling	1 00
E. G. Cox, Rockwood, O	Best plate of Mountain Rose	2 00
M. I. Shively, Chillicothe, O	2nd best plate of Mountain Rose	1 00
W. H. West, Chillicothe, O	Best plate of Old Mixon Cling	2 00
W. H. West, Chillicothe, O	Best plate of Old Mixon Free	2 00
T. S. Johnson, Port Clinton, O	2nd best plate of Old Mixon Free	1 00
E. G. Cox, Rockwood, O	Best plate of Salway	2 00
U. T. Cox, Rockwood, O	2nd best plate of Salway	1 00
W. H. West, Chillicothe, O	Best plate of Smock Free	2 00
E. G. Cox, Rockwood, O	2nd best plate of Smock Free	1 00
W. H. West, Chillicothe, O	Best plate of Stump	2 00
T. S. Johnson, Port Clinton, O	2nd best plate of Stump	1 00
W. W. Farnsworth, Waterville, O	Best plate of Wheatland	2 00
Fred Charles, Columbus, O	Best plate of New Seedling	2 00

HORTICULTURAL PRODUCTS—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
	Quinces.	
Myrtletree Fruit Farm, St. Paris, O	Best plate of Meech	$2 00
M. I. Shively, Chillicothe, O	2nd best plate of Meech	1 00
E. G. Cox, Rockwood, O	Best plate of Rea's Mammoth	2 00
Myrtletree Fruit Farm, St. Paris, O	2nd best plate of Rea's Mammoth	1 00
U. T. Cox, Rockwood, O	Best plate of Orange	2 00
E. G. Cox, Rockwood, O	2nd best plate of Orange	1 00
Mrytletree Fruit Farm, St. Paris, O	Best peck of quinces	2 00
	Plums.	
James E. Carpenter, Republic, O	Best five varieties of Japanese	3 00
H. L. Persing, Clyde, O	2nd best five varieties of Japanese	2 00
E. G. Cox, Rockwood, O	Best five varieties of European	3 00
U. T. Cox, Rockwood, O	2nd best five varieties of Euproean	2 00
Cary W. Montgomery, Newark, O	Best five varieties of native	3 00
E. M. Woodard, Willoughby, O	2nd best five varieties of native	2 00
W. H. West, Chillicothe, O	Best five varieties, dessert and culinary qualities to be considered	3 00
U. T. Cox, Rockwood, O	2nd best	2 00
E. M. Woodard, Willoughby, O	Best five varieties, market qualities to be considered	3 00
E. G. Cox, Rockwood, O	2nd best	2 00
E. G. Cox, Rockwood, O	Best collection of ten varieties, dessert, culinary and market qualities to be considered	6 00
T. S. Johnson, Port Clinton, O	2nd best	4 00
H. L. Persing, Clyde, O	Best plate of Abundance	2 00
E. M. Woodard, Willoughby, O	2nd best plate of Abundance	1 00
H. Burkholder, Clyde, O	Best plate of Bradshaw	2 00
E. M. Woodard, Willoughby, O	2nd best plate of Bradshaw	1 00
H. L. Persing, Clyde, O	Best plate of Burbank	2 00
T. S. Johnson, Port Clinton, O	2nd best plate of Burbank	1 00
T. S. Johnson, Port Clinton, O	Best plate of Coe's Golden Drop	2 00
R. G. Johnson, Gypsum, O	2nd best plate of Coe's Golden Drop	1 00
T. S. Johnson, Port Clinton, O	Best plate of Duane's Purple	2 00
E. G. Cox, Rockwood, O	Best plate of Fellemburg	2 00
C. W. Counter, Toledo, O	Best plate of French Damson	2 00
Cary W. Montgomery, Newark, O	2nd best plate of French Damson	1 00
E. G. Cox, Rockwood, O	Best plate of Grand Duke	2 00
W. W. Farnsworth, Waterville, O	2nd best plate of Grand Duke	1 00
E. G. Cox, Rockwood, O	Best plate of Guii	2 00
W. W. Farnsworth, Waterville, O	2nd best plate of Guii	1 00
E. G. Cox, Rockwood, O	Best plate of German Prune	2 00
U. T. Cox, Rockwood, O	2nd best plate of German Prune	1 00
J. L. Keckley, Marysville, O	Best plate of Hale	2 00
U. T Cox, Rockwood, O	Best plate of Imperial Gage	2 00
E. G. Cox, Rockwood, O	2nd best plate of Imperial Gage	1 00
W. H. West, Chillicothe, O	Best plate of Lombard	2 00
U. T. Cox, Rockwood, O	2nd best plate of Lombard	1 00
E. G. Cox, Rockwood, O	Best plate of Monarch	2 00
W. W. Farnsworth, Waterville, O	2nd best plate of Monarch	1 00
W. H. West, Chillicothe, O	Best plate of Moore's Arctic	2 00
E. G. Cox, Rockwood, O	2nd best plate of Moore's Arctic	1 00
U. T. Cox, Rockwood, O	Best plate of Pond's Seedling	2 00
E. G. Cox, Rockwood, O	2nd best plate of Pond's Seedling	1 00
E. G. Cox, Rockwood, O	Best plate of Reine Claude	2 00
U. T. Cox, Rockwood, O	2nd best plate of Reine Claude	1 00
H. L. Persing, Clyde, O	Best plate of Red June	2 00
James E. Carpenter, Republic, O	2nd best plate of Red June	1 00
Moses Hagler, Xenia, O	Best plate of Richland	2 00
Cary W. Montgomery, Newark, O	2nd best plate of Richland	1 00
U. T. Cox, Rockwood, O	Best plate of Shippers' Pride	2 00
E. G. Cox, Rockwood, O	2nd best plate of Shippers' Pride	1 00
W. H. West, Chillicothe, O	Best plate of Shropshire	2 00
E. M. Woodard, Willoughby, O	2nd best plate of Shropshire	1 00
Moses Hagler, Xenia, O	Best plate of Union Purple	2 00
H. L. Persing, Clyde, O	2nd best plate of Union Purple	1 00
J. L. Keckley, Marysville, O	Best plate of Wickson	2 00
James E. Carpenter, Republic, O	2nd best plate of Wickson	1 00
W. W. Farnsworth, Waterville, O	Best plate of Yellow Egg	2 00
T. S. Johnson, Port Clinton, O	2nd best plate of Yellow Egg	1 00
	Pears.	
T. S. Johnson, Port Clinton, O	Best three varieties of summer	3 00
U. T. Cox, Rockwood, O	2nd best three varieties of summer	1 50
H. L. Persing, Clyde, O	Best three varieties of fall	3 00
T. S. Johnson, Port Clinton, O	2nd best three varieties of fall	1 50
C. W. Counter, Toledo, O	Best three varieties of winter	3 00
H. L. Persing, Clyde, O	2nd best three varieties of winter	1 50
T. S. Johnson, Port Clinton, O	Best three varieties, dessert and culinary qualities to be considered	3 00

HORTICULTURAL PRODUCTS—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
	Pears.	
H. L. Persing, Clyde, O	2nd best three varieties, dessert and culinary qualities to be considered	$1 50
W. W. Farnsworth, Waterville, O	Best three varieties market qualities to be considered	3 00
Cary W. Montgomery, Newark, O	2nd best	1 50
T. S. Johnson, Port Clinton, O	Best collection of fifteen varieties, dessert, culinary and market qualities to be considered	12 00
W. W. Farnsworth, Waterville, O	2nd best	8 00
C. W. Counter, Toledo, O	Best plate of Anjou	2 00
Joseph Perine, Lebanon, O	2nd best plate of Anjou	1 00
U. T. Cox, Rockwood, O	Best plate of Bartlett	2 00
W. W. Farnsworth, Waterville, O	2nd best plate of Bartlett	1 00
T. S. Johnson, Port Clinton, O	Best plate of Beurre Bosc	2 00
R. G. Johnson, Gypsum, O	2nd best plate of Beurre Bosc	1 00
W. W. Farnsworth, Waterville, O	Best plate of Beurre Clairgeau	2 00
James E. Carpenter, Republic, O	2nd best plate of Beurre Clairgeau	1 00
James E. Carpenter, Republic, O	Best plate of Clapp's Favorite	2 00
T. S. Johnson, Port Clinton, O	2nd best plate of Clapp's Favorite	1 00
C. W. Counter, Toledo, O	Best plate of Doyenne Bousoc	2 00
W. W. Farnsworth, Waterville, O	2nd best plate of Doyenne Bousoc	1 00
Cary W. Montgomery, Newark, O	Best plate of Duchess	2 00
T. S. Johnson, Port Clinton, O	2nd best plate of Duchess	1 00
T. S. Johnson, Port Clinton, O	Best plate of Flemish Beauty	2 00
R. G. Johnson, Gypsum, O	2nd best plate of Flemish Beauty	1 00
C. W. Counter, Toledo, O	Best plate of Frederick Clapp	2 00
W. W. Farnsworth, Waterville, O	2nd best plate of Frederick Clapp	1 00
Myrtletree Fruit Farm, St. Paris, O	Best plate of Howell	2 00
R. G. Johnson, Gypsum, O	2nd best plate of Howell	1 00
E. G. Cox, Rockwood, O	Best plate of Keiffer	2 00
C. W. Counter, Toledo, O	2nd best plate of Keiffer	1 00
T. S. Johnson, Port Clinton, O	Best plate of Kirtland	2 00
R. G. Johnson, Gypsum, O	2nd best plate of Kirtland	1 00
T. S. Johnson, Port Clinton, O	Best plate of Koonce	2 00
R. G. Johnson, Gypsum, O	2nd best plate of Koonce	1 00
C. W. Counter, Toledo, O	Best plate of Lawrence	2 00
W. W. Farnsworth, Waterville, O	2nd best plate of Lawrence	1 00
Myrtletree Fruit Farm, St. Paris, O	Best plate of Louise Bonne	2 00
T. S. Johnson, Port Clinton, O	2nd best plate of Louise Bonne	1 00
Fred Charles, Columbus, O	Best plate of President	2 00
A. J. Trumbo & Son, Hanging Rock, O	Best plate of Seckel	2 00
U. T. Cox, Rockwood, O	2nd best plate of Seckel	1 00
C. W. Counter, Toledo, O	Best plate of Sheldon	2 00
D. G. Cherry, Newark, O	2nd best plate of Sheldon	1 00
R. G. Johnson, Gypsum, O	Best plate of Vermont Beauty	2 00
T. S. Johnson, Port Clinton, O	2nd best plate of Vermont Beauty	1 00
M. J. Persing, Clyde, O	Best plate of Winter Nelis	2 00
C. W. Counter, Toledo, O	2nd best plate of Winter Nelis	1 00
	Grapes.	
Cary W. Montgomery, Newark, O	Best six varieties, table qualities to be considered	5 00
W. H. West, Chillicothe, O	2nd best	3 00
W. H. West, Chillicothe, O	Best six varieties, market qualities to be considered	5 00
Cary W. Montgomery, Newark, O	2nd best	3 00
W. H. West, Chillicothe, O	Best collection of ten varieties	8 00
W. H. West, Chillicothe, O	Best collection of twenty varieties	12 00
E. M. Woodard, Willoughby, O	2nd best collection of twenty varieties	8 00
W. H. West, Chillicothe, O	Best plate of Agawam	2 00
R. G. Johnson, Gypsum, O	2nd best plate of Agawam	1 00
E. M. Woodard, Willoughby, O	Best plate of Brighton	2 00
W. H. West, Chillicothe, O	2nd best plate of Brighton	1 00
W. H. West, Chillicothe, O	Best plate of Campbell's Early	2 00
W. H. West, Chillicothe, O	Best plate of Catawba	2 00
T. S. Johnson, Port Clinton, O	2nd best plate of Catawba	1 00
W. H. West, Chillicothe, O	Best plate of Concord	2 00
H. L. Persing, Clyde, O	2nd best plate of Concord	1 00
W. H. West, Chillicothe, O	Best plate of Delaware	2 00
E. M. Woodard, Willoughby, O	2nd best plate of Delaware	1 00
James E. Carpenter, Republic, O	Best plate of Eaton	2 00
W. H. West, Chillicothe, O	Best plate of Empire State	2 00
T. S. Johnson, Port Clinton, O	2nd best plate of Empire State	1 00
Cary W. Montgomery, Newark, O	Best plate of Green Mountain	2 00
C. W. Counter, Toledo, O	2nd best plate of Green Mountain	1 00
W. H. West, Chillicothe, O	Best plate of Ives	2 00
T. S. Johnson, Port Clinton, O	2nd best plate of Ives	1 00
W. H. West, Chillicothe, O	Best plate of Lady Washington	2 00
Cary W. Montgomery, Newark, O	Best plate of Lindley	2 00
J. B. Stewart, Thornville, O	2nd best plate of Lindley	1 00

HORTICULTURAL PRODUCTS—Concluded.

Owner's Name and Postoffice.	Name of Article.	Amount.
	Grapes.	
W. H. West, Chillicothe, O	Best plate of Moore's Diamond	$2 00
E. M. Woodard, Willoughby, O	2nd best plate of Moore's Diamond	1 00
James E. Carpenter, Republic, O	Best plate of Moore's Early	2 00
Cary W. Montgomery, Newark, O	2nd best plate of Moore's Early	1 00
T. S. Johnson, Port Clinton, O	Best plate of Niagara	2 00
W. H. West, Chillicothe, O	2nd best plate of Niagara	1 00
W. H. West, Chillicothe, O	Best plate of Norton's Virginia	2 00
E. M. Woodard, Willoughby, O	Best plate of Presley	2 00
T. S. Johnson, Port Clinton, O	Best plate of Pocklington	2 00
W. H. West, Chillicothe, O	2nd best plate of Pocklington	1 00
Cary W. Montgomery, Newark, O	Best plate of Salem	2 00
W. H. West, Chillicothe, O	Best plate of Wilder	2 00
W. H. West, Chillicothe, O	Best plate of Woodruff Red	2 00
H. L. Persing, Clyde, O	Best plate of Worden	2 00
T. S. Johnson, Port Clinton, O	2nd best plate of Worden	1 00
T. S. Johnson, Port Clinton, O	Best plate of new and valuable seedling	2 00
	County Fruits.	
W. W. Farnsworth, Waterville, O	Best exhibit of 100 plates	100 00
E. M. Woodard, Willoughby, O	2nd best exhibit of 100 plates	85 00
James E. Carpenter, Republic, O	3rd best exhibit of 100 plates	65 00
U. T. Cox, Rockwood, O	4th best exhibit of 100 plates	50 00
T. S. Johnson, Port Clinton, O	5th best exhibit of 100 plates	40 00

SEVENTH DEPARTMENT—PLANTS AND FLOWERS.

WM. MILLER, Member in Charge.

Owner's Name and Postoffice.	Name of Article.	Amount.
	Decorative and Flowering Plants.	
Mrs. E. L. Charles, Columbus, O	Best collection of palms, twenty varieties	$15 00
Miss M. E. Charles, Columbus, O	2nd best	8 00
Mrs. E. L. Charles, Columbus, O	Best single specimen of palm	5 00
Miss M. E. Charles, Columbus, O	2nd best single specimen of palm	3 00
Mrs. E. L. Charles, Columbus, O	Best collection of ferns and lycopodium	10 00
Miss M. E. Charles, Columbus, O	2nd best	5 00
Mrs. E. L. Charles, Columbus, O	Best collection of variegated foliage plants	10 00
Mrs. E. L. Charles, Columbus, O	Best collection of stove and greenhouse plants	20 00
Mrs. E. L. Charles, Columbus, O	Best collection of begonias	8 00
Mrs. T. H. Kennedy, Columbus, O	2nd best collection of begonias	4 00
Mrs. E. L. Charles, Columbus, O	Best collection of cannas	10 00
Mrs. E. L. Charles, Columbus, O	Best collection of geraniums	8 00
Mrs. E. L. Charles, Columbus, O	Best collection of asters	5 00
Mrs. E. L. Charles, Columbus, O	Best single basket, filled with plants	3 00
Miss M. E. Charles, Columbus, O	2nd best single basket, filled with plants	2 00
Mrs. E. L. Charles, Columbus, O	Best pair of vases, filled with plants	5 00
Mrs. E. L. Charles, Columbus, O	Best pair of hanging baskets, filled with plants	4 00
Miss M. E. Charles, Columbus, O	2nd best	2 00
Mrs. E. L. Charles, Columbus, O	Best specimen of rubber plant	3 00
Miss M. E. Charles, Columbus, O	2nd best specimen of rubber plant	2 00
Mrs. E. L. Charles, Columbus, O	Best single specimen asparagus, sprengeri or plumosus	3 00
Miss M. E. Charles, Columbus, O	2nd best	2 00
	Cut Flowers and Flower Designs.	
Mrs. E. L. Charles, Columbus, O	Best pair of bouquets, any style	10 00
Miss M. E. Charles, Columbus, O	2nd best pair of bouquets, any style	5 00
Mrs. E. L. Charles, Columbus, O	Best dining table vase, 24 inches	10 00
Miss M. E. Charles, Columbus, O	2nd best dining table vase, 24 inches	5 00
Mrs. E. L. Charles, Columbus, O	Best dining table vase, 12 inches	5 00
Miss M. E. Charles, Columbus, O	2nd best dining table vase, 12 inches	3 00
Mrs. E. L. Charles, Columbus, O	Best large festival design	12 00
Miss M. E. Charles, Columbus, O	2nd best large festival design	6 00
Mrs. E. L. Charles, Columbus, O	Best large funeral design	12 00
Miss M. E. Charles, Columbus, O	2nd best large funeral design	6 00
Mrs. E. L. Charles, Columbus, O	Best collection of small designs	12 00
Mrs. E. L. Charles, Columbus, O	Best display of cut roses	10 00
Miss M. E. Charles, Columbus, O	2nd best display of cut roses	5 00
Cushman Gladiolus Co., Sylvania, O	Best display of cut gladioli	12 00
Mrs. E. L. Charles, Columbus, O	2nd best display of cut gladioli	6 00
Cushman Gladiolus Co., Sylvania, O	Best display of cut dahlias	8 00
Miss M. E. Charles, Columbus, O	2nd best display of cut dahlias	4 00
Mrs. E. L. Charles, Columbus, O	Best display of cut carnations	8 00
Miss M. E. Charles, Columbus, O	2nd best display of cut carnations	4 00
Cushman Gladiolus Co., Sylvania, O	Best display of cut asters	8 00
Mrs. E. L. Charles, Columbus, O	2nd best display of cut asters	4 00
Mrs. E. L. Charles, Columbus, O	Best display of cut flowers	15 00
Miss M. E. Charles, Columbus, O	2nd best display of cut flowers	10 00

ELEVENTH DEPARTMENT—WOMAN'S WORK.

SAMUEL TAYLOR, Member in Charge.

Owner's Name and Postoffice.	Name of Article.	Amount.
	Household Fabrics—Amateur.	
Mrs. E. Buck, Cincinnati, Ohio	Best velvet quilt	$4 00
Mrs. Chas. Doughty, Martel, O	2nd best velvet quilt	2 00
Mrs. L. E. Rockwell, Quincy, Ill	Best silk quilt	3 00
Miss Anna Miller, Quincy, Ill	2nd best silk quilt	2 00
Miss Anna Miller, Quincy, Ill	Best Japanese quilt (crazy)	3 00
Miss S. Levy, Columbus, O	2nd best Japanese quilt (crazy)	2 00
Mrs. L. E. Rockwell, Quincy, Ill	Best worsted quilt	2 00
Mrs. M. B. Clutter, Pataskala, O	2nd best worsted quilt	1 00
Miss Anna Miller, Quincy, Ill	Best log-cabin quilt	2 00
Mary D. Young, Columbus, O	2nd best log-cabin quilt	1 00
Laura Hardy, Marion, O	Best white quilt	2 00
Mrs. L. E. Rockwell, Quincy, Ill	2nd best white quilt	1 00
Mrs. M. B. Clutter, Pataskala, O	Best calico patchwork quilt	2 00
Miss Lida Crickard, Delaware, O	2nd best calico patchwork quilt	1 00
Mrs. E. Buck, Cincinnati, O	Best cradle quilt	2 00
Mrs. O. A. Spahr, Xenia, O	2nd best cradle quilt	1 00
Miss Anna Miller, Quincy, Ill	Best silk comfort	2 00
Mrs. L. E. Rockwell, Quincy, Ill	2nd best silk comfort	1 00
Mrs. M. B. Clutter, Pataskala, O	Best worsted comfort	2 00
Miss Anna Miller, Quincy, Ill	2nd best worsted comfort	1 00
Stella Mitchell, Bloomville, O	Best hearth rug	2 00
Mrs. L. E. Rockwell, Quincy, Ill	2nd best hearth rug	1 00
Miss Anna Miller, Quincy, Ill	Best ten yards rag carpet	3 00
Mrs. L. E. Rockwell, Quincy, Ill	2nd best ten yards rag carpet	2 00
	Knitting—Amateur.	
Mrs. Rob. Sproul, Troy, O	Best pair of silk stockings	2 00
Miss Anna Miller, Quincy, Ill	2nd best pair of silk stockings	1 00
Miss Anna Miller, Quincy, Ill	Best pair of silk socks	2 00
Mrs. L. E. Rockwell, Quincy, Ill	2nd best pair of silk socks	1 00
Mattie Hall, Lexington, Ky	Best pair of woolen stockings	2 00
Stella Mitchell, Bloomville, O	2nd best pair of woolen stockings	1 00
Mattie Hall, Lexington, Ky	Best pair of woolen socks	2 00
Mrs. Rob. Sproul, Troy, O	2nd best pair of woolen socks	1 00
Mrs. C. L. Babb, Xenia, O	Best pair of golf stockings	2 00
Mrs. L. C. Huckstep, Bowling Green, Mo	Best pair of golf gloves	2 00
Stella Mitchell, Bloomville, O	2nd best pair of golf gloves	1 00
Miss Anna Miller, Quincy, Ill	Best pair of silk mittens	2 00
Mattie Hall, Lexington, Ky	2nd best pair of silk mittens	1 00
Mrs. L. C. Huckstep, Bowling Green, Mo	Best pair of woolen mittens	2 00
Alice Ackley, Columbus, O	2nd best pair of woolen mittens	1 00
Mrs. C. M. Nichols, Columbus, O	Best pair of slippers	2 00
Mrs. Rob. Sproul, Troy, O	2nd best pair of slippers	1 00
Mrs. M. B. Clutter, Pataskala, O	Best bed spread	2 00
Mrs. C. S. David, Marysville, O	2nd best bed spread	1 00
Mrs. E. Buck, Cincinnati, O	Best lady's skirt	2 00
Mrs. C. L. Babb, Xenia, O	2nd best lady's skirt	1 00
Nellie A. Goorley, Mt. Gilead, O	Best sweater	2 00
Amanda Reinicke, Dayton, O	2nd best sweater	1 00
Miss Nellie Slegar, Effingham, Ill	Best large afghan	3 00
Mattie Hall, Lexington, Ky	Best display of five pieces	3 00
Alice Ackley, Columbus, O	2nd best display of five pieces	2 00
	Crochet Work—Amateur.	
Miss Anna Miller, Quincy, Ill	Best bed spread	2 00
Mary V. Smucker, Newark, O	2nd best bed spread	1 00
Mrs. L. E. Rockwell, Quincy, Ill	Best skirt	2 00
Mrs. C. J. McClure, Dayton, O	2nd best skirt	1 00
Mrs. C. L. Babb, Xenia, O	Best slippers	2 00
Mary V. Smucker, Newark, O	2nd best slippers	1 00
Mrs. L. E. Rockwell, Quincy, Ill	Best large afghan	2 00
Mrs. C. J. McClure, Dayton, O	2nd best large afghan	1 00
Mrs. E. Buck, Cincinnati, O	Best scarf	1 00
Mrs. M. Rhinehart, Marion, O	2nd best scarf	50
Mrs. Jennie S. Gillett, Columbus, O	Best cape	1 00
Mrs. C. L. Babb, Xenia, O	2nd best cape	50
Amanda Reinicke, Dayton, O	Best doylie	1 00
Laura Hardy, Marion, O	2nd best doylie	50
Louise H. Ackley, Columbus, O	Best yard of woolen lace	1 00
Mrs. Chas. Doughty, Martel, O	2nd best yard of woolen lace	50
Mrs. C. M. Nichols, Columbus, O	Best yard of linen lace	1 00

WOMAN'S WORK—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
	Crochet Work—Amateur.	
Mrs. M. Rhinehart, Marion, O	2nd best yard of linen lace	$ 50
Mrs. E. Buck, Cincinnati, O	Best yard of silk lace	1 00
Miss L. P. Warman, Norwood, O	2nd best yard of silk lace	50
Mrs. C. J. McClure, Dayton, O	Best infant's sacque	1 00
Louise H. Ackley, Columbus, O	2nd best infant's sacque	50
Louise H. Ackley, Columbus, O	Best infant's hood	1 00
Miss L. P. Warman, Norwood, O	2nd best infant's hood	50
Mrs. E. Buck, Cincinnati, O	Best infant's skirt	1 00
Mrs. C. L. Babb, Xenia, O	2nd best infant's skirt	50
Mrs. C. L. Babb, Xenia, O	Best afghan for child's cab	1 00
Mattie Hall, Lexington, Ky	2nd best afghan for child's cab	50
Mrs. C. J. McClure, Dayton, O	Best shawl	1 00
Mrs. E. Buck, Cincinnati, O	2nd best shawl	50
Mrs. L. C. Huckstep, Bowling Green, Mo	Best display of five pieces	3 00
Alice Ackley, Columbus, O	2nd best display of five pieces	2 00
	Hand Needlework—Amateur.	
Stella Mitchell, Bloomville, O	Best pair pillow cases	2 00
Miss L. V. Johnson, Dayton, O	2nd best pair of pillow cases	1 00
Mrs. C. M. Nichols, Columbus, O	Best sheet	2 00
Mrs. E. Buck, Cincinnati, O	2nd best sheet	1 00
Miss L. P. Warman, Norwood, O	Best bed spread	2 00
Mrs. Charles Doughty, Martel, O	2nd best bed spread	1 00
Nellie A. Goorley, Mt. Gilead, O	Best lady's waist	3 00
Mrs. Bertha Bates, Dayton, O	2nd best lady's waist	2 00
Anna W. Bond, Toledo, O	Best dressing jacket	2 00
Mrs. C. L. Babb, Xenia, O	2nd best dressing jacket	1 00
Nellie A. Goorley, Mt. Gilead, O	Best night dress	2 00
Miss Anna Miller, Quincy, Ill	2nd best night dress	1 00
Ida Cheney, Toledo, O	Best night shirt	2 00
Mrs. C. J. McClure, Dayton, O	2nd best night shirt	1 00
Mrs. L. E. Rockwell, Quincy, Ill	Best short underskirt	2 00
Miss Anna Miller, Quincy, Ill	2nd best short underskirt	1 00
Ida Cheney, Toledo, O	Best corset cover	2 00
Mary V. Smucker, Newark, O	2nd best corset cover	1 00
Mrs. C. J. McClure, Dayton, O	Best infant's robe and skirt	2 00
Mrs. L. E. Rockwell, Quincy, Ill	2nd best infant's robe and skirt	1 00
Mrs. Rob. Sproul, Troy, O	Best fancy apron	2 00
Mrs. M. J. Nichols, Bellefontaine, O	2nd best fancy apron	1 00
Mrs. O. A. Spahr, Xenia, O	Best sofa pillow	2 00
Mrs. Elizabeth McMulin, Columbus O	2nd best sofa pillow	1 00
Miss L. P. Warman, Norwood, O	Best display of 8 pieces	3 00
Miss Anna Miller, Quincy, Ill	2nd best display of 8 pieces	2 00
	Machine Sewing—Amateur.	
Anna W. Bond, Toledo, O	Best suit lady's underwear 3 pieces	2 00
Mary V. Smucker, Newark, O	2nd best	1 00
Miss L. P. Warman, Norwood, O	Best lady's dress	2 00
Mrs. C. J. McClure, Dayton, O	2nd best lady's dress	1 00
Anna W. Pond, Toledo, O	Best night dress	1 00
Mrs. Chas. Doughty, Martel, O	2nd best night dress	50
Mrs. Chas. Doughty, Martel, O	Best dressing jacket	2 00
Mrs. O. A. Spahr, Xenia, O	2nd best dressing jacket	1 00
Mrs. C. J. McClure, Dayton, O	Best short underskirt	1 00
Mrs. Kate M. Dean, Logan, O	2nd best short underskirt	50
Mrs. Chas. Doughty, Martel, O	Best night shirt	1 00
Mrs. E. A. Mullen, Marysville, O	2nd best night shirt	50
Miss Anna Miller, Quincy, Ill	Best skirt	1 00
Mrs. Chas. Doughty, Martel, O	2nd best skirt	50
Miss Anna Miller, Quincy, Ill	Best corset cover	1 00
Mrs. Bertha Bates, Dayton, O	2nd best corset cover	50
Mrs. Chas. Doughty, Martel, O	Best dress apron	1 00
Mrs. Bertha Bates, Dayton, O	2nd best dress apron	50
Miss Anna Miller, Quincy, Ill	Best display of 5 pieces	3 00
Mrs. Chas. Doughty, Martel, O	2nd best display of 5 pieces	2 00
	Children's Class.	
Etta Wilson, Norwood, O	Best outline embroidery	1 00
Grace Ingraham, Quincy, Ill	2nd best outline embroidery	50
Helen Wilson, Dayton, O	Best silk embroidery	1 00
Grace Ingraham, Quincy, Ill	2nd best silk embroidery	50
Etta Wilson, Norwood, O	Best cross-stitch embroidery	1 00
Alma L. Babb, Xenia, O	2nd best cross-stitch embroidery	50
Helen Wilson, Dayton, O	Best drawn work	1 00
Etta Wilson, Norwood, O	2nd best drawn work	50
Grace Ingraham, Quincy, Ill	Best plain sewing	1 00

WOMAN'S WORK—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
	Children's Class.	
Helen Brooks, Martel, O	2nd best plain sewing	$ 50
Grace Ingraham, Quincy, Ill	Best knitting	1 00
Helen Wilson, Dayton, O	2nd best knitting	50
Helen Wilson, Dayton, O	Best crocheting	1 00
Alma L. Babb, Xenia, O	2nd best crocheting	50
Helen Wilson, Dayton, O	Best pyrography	1 00
Alma L. Babb, Xenia, O	Best water color	1 00
Helen Wilson, Dayton, O	2nd best water color	50
Grace Ingraham, Quincy, Ill	Best pencil drawing	1 00
Helen Lefler, Dayton, O	2nd best pencil drawing	50
	Outline Embroidery—Amateur.	
Miss Anna Miller, Quincy, Ill	Best pair pillow cases	1 00
Miss M. Johnson, Dayton, O	2nd best pair pillow cases	50
Mrs. E. A. Mullen, Marysville, O	Best sheet	1 00
Mrs. C. M. Nichols, Columbus, O	2nd best sheet	50
Mattie Hall, Lexington, Ky	Best centerpiece	1 00
Mrs. J. E. Hains, Columbus, O	2nd best centerpiece	50
Mrs. L. E. Rockwell, Quincy, Ill	Best lunch cloth	1 00
Miss M. Johnson, Dayton, O	2nd best lunch cloth	50
Mrs. Jennie S. Gillett, Columbus, O	Best table cover	1 00
Mattie Hall, Lexington, Ky	2nd best table cover	50
Mattie Hall, Lexington, Ky	Best couch pillow	1 00
Mrs. J. E. Hains, Columbus, O	2nd best couch pillow	50
Miss M. Johnson, Dayton, O	Best six doylies	1 00
Charlotte M. Harris, Springfield, O	2nd best six doylies	50
Mrs. C. M. Nichols, Columbus, O	Best tray cloth	1 00
Mattie Hall, Lexington, Ky	2nd best tray cloth	50
Mattie Hall, Lexington, Ky	Best display of 5 pieces	3 00
Miss L. V. Johnson, Dayton, O	2nd best display of 5 pieces	2 00
	Cross-stitchEmbroidery–Amateur	
Miss L. E. Rockwell, Quincy, Ill	Best afghan, large	2 00
M. Minnie Smith, Newark, O	2nd best afghan, large	1 00
Mattie Hall, Lexington, Ky	Best sofa pillow	2 00
M. Minnie Smith, Newark, O	2nd best sofa pillow	1 00
Mrs. Effie Cunningham, Newark, O	Best handkerchief case	2 00
Mattie Hall, Lexington, Ky	2nd best handkerchief case	1 00
Mrs. Bertha Bates, Dayton, O	Best glove case	2 00
Mrs. Effie Cunningham, Newark, O	2nd best glove case	1 00
Lois Dann, Columbus, O	Best table cover	2 00
Mrs. E. Buck, Cincinnati, O	2nd best table cover	1 00
Mrs. Bertha Bates, Dayton, O	Best pin cushion	2 00
Miss L. V. Johnson, Dayton, O	2nd best pin cushion	1 00
Mrs. E. A. Mullen, Marysville, O	Best shirtwaist set	2 00
Amanda Reinicke, Dayton, O	2nd best shirtwaist set	1 00
Miss Anna Miller, Quincy, Ill	Best display of 5 pieces	3 00
Mattie Hall, Lexington, Ky	2nd best display of 5 pieces	2 00
	Embroidery—Amateur.	
Miss Mary Goddard, Columbus, O	Best pair pillow cases	2 00
Mrs. C. S. David, Marysville, O	2nd best pair of pillow cases	1 00
Mrs. C. M. Nichols, Columbus, O	Best top sheet	2 00
Miss L. P. Warman, Norwood, O	2nd best top sheet	1 00
Mrs. C. M. Nichols, Columbus, O	Best table cloth	2 00
Mrs. O. A. Spahr, Xenia, O	2nd best table cloth	1 00
Mrs. C. M. Nichols, Columbus, O	Best 12 dinner napkins	2 00
Mrs. O. A. Spahr, Xenia, O	2nd best 12 dinner napkins	1 00
Mattie Hall, Lexington, Ky	Best lunch cloth	2 00
Nellie A. Goorley, Mt. Gilead, O	2nd best lunch cloth	1 00
Miss Fannie Fearn, Groveport, O	Best center piece	2 00
Mrs. O. A. Spahr, Xenia, O	2nd best center piece	1 00
Mattie Hall, Lexington, Ky	Best tray cloth	2 00
Elizabeth Leigh, Groveport, O	2nd best tray cloth	1 00
Nellie A. Goorley, Mt. Gilead, O	Best sideboard cover	2 00
Miss Fannie Fearn, Groveport, O	2nd best sideboard cover	1 00
Miss Anna Miller, Quincy, Ill	Best pair towels	2 00
Mrs. E. Buck, Cincinnati, O	2nd best pair towels	1 00
Mrs. Jennie S. Gillett, Columbus, O	Best handkerchief	2 00
Mrs. E. Buck, Cincinnati, O	2nd best handkerchief	1 00
Miss L. P. Warman, Norwood, O	Best six doylies	2 00
Mrs. L. Trimble, Marion, O	Best initials on handkerchief	2 00
Elizabeth Leigh, Groveport, O	2nd best initials on handkerchief	1 00
Mattie Hall, Lexington, Ky	Best shirtwaist set	3 00
Miss Mary Goddard, Columbus, O	Best shirtwaist	2 00
Lyman Strong, Huntsburg, O	2nd best shirtwaist	1 00
Miss L. P. Warman, Norwood, O	Best specimen Mount-mellick	2 00
Nellie A. Goorley, Mt. Gilead, O	2nd best specimen Mount-mellick	1 00

WOMAN'S WORK—Continued.

Owner's Name and Postoffice Address.	Name of Article.	Amount.
	Drawn Work—Amateur.	
Miss Anna Miller, Quincy, Ill	Best lunch cloth	$2 00
Mrs. Kate M. Dean, Logan, O	2nd best lunch cloth	1 00
Miss Anna Miller, Quincy, Ill	Best center piece	2 00
Mrs. Kate M. Dean, Logan, O	2nd best center piece	1 00
Miss Mary Goddard, Columbus, O	Best pair pillow cases	2 00
Mrs. O. A. Spahr, Xenia, O	2nd best pair pillow cases	1 00
Charlotte M. Harris, Springfield, O	Best sheet	2 00
Mrs. C. S. David, Marysville, O	2nd best sheet	1 00
Mrs. C. S. David, Marysville, O	Best tray cloth	2 00
Mrs. Rob. Sproul, Troy, O	2nd best tray cloth	1 00
Mrs. Rob. Sproul, Troy, O	Best dresser cover	2 00
Mrs. E. Buck, Cincinnati, O	2nd best dresser cover	1 00
Mrs. O. A. Spahr, Xenia, O	Best six napkins	2 00
Mrs. L. E. Rockwell, Quincy, Ill	2nd best six napkins	1 00
Mrs. Lilia M. Huber, DeGraff, O	Best six doylies	2 00
Mrs. Rob. Sproul, Troy, O	2nd best six doylies	1 00
Nellie A. Goorley, Mt. Gilead, O	Best pair towels	2 00
Miss Anna Miller, Quincy, Ill	2nd best pair towels	1 00
Mrs. L. P. Warman, Norwood, O	Best specimen silk	2 00
Nellie A. Goorley, Mt. Gilead, O	Best specimen hemstitching	2 00
Mary V. Smucker, Newark, O	2nd best specimen hemstitching	1 00
Mrs. O. A. Spahr, Xenia, O	Best handkerchief	2 00
Mrs. L. P. Warman, Norwood, O	2nd best handkerchief	1 00
	Silk Embroidery—Amateur.	
Elizabeth Leigh, Groveport, O	Best lady's flannel skirt	2 00
Mrs. E. Buck, Cincinnati, O	2nd best lady's flannel skirt	1 00
Mrs. L. E. Rockwell, Quincy, Ill	Best infant's cloak	2 00
Miss Anna Miller, Quincy, Ill	2nd best infant's cloak	1 00
Mrs. L. E. Rockwell, Quincy, Ill	Best infant's shawl or blanket	2 00
Miss Anna Miller, Quincy, Ill	2nd best infant's shawl or blanket	1 00
Miss Anna Miller, Quincy, Ill	Best child's dress	2 00
Miss L. P. Warman, Norwood, O	2nd best child's dress	1 00
Miss Fannie Fearn, Groveport, O	Best opera bag	2 00
Miss L. V. Johnson, Dayton, O	2nd best opera bag	1 00
Mrs. C. M. Nichols, Columbus, O	Best monogram	2 00
Mrs. C. J. McClure, Dayton, O	2nd best monogram	1 00
Mrs. E. A. Mullen, Marysville, O	Best specimen	2 00
Mrs. L. E. Rockwell, Quincy, Ill	2nd best specimen	1 00
Ida Cheney, Toledo, O	Best display of 5 pieces	5 00
Miss Nellie Sligar, Effingham, Ill	2nd best display of 5 pieces	2 00
	Battenburg Lace—Amateur.	
Miss L. P. Warman, Norwood, O	2nd best curtains	1 00
Mrs. J. M. Coe, Mt. Gilead, O	Best center piece	2 00
Mrs. Bertha Bates, Dayton, O	2nd best center piece	1 00
Mrs. C. S. David, Marysville, O	Best dresser cover	2 00
Mrs. T. G. Fleming, Hanover, O	2nd best dresser cover	1 00
Lillian R. State, Springfield, O	Best table cover	2 00
Mrs. Dearbaugh, Troy, O	2nd best table cover	1 00
Mrs. T. G. Fleming, Hanover, O	Best bolero	2 00
Lillian R. State, Springfield, O	Best collar	2 00
Mrs. E. H. Hoening, Columbus, O	2nd best collar	1 00
Lillian R. State, Springfield, O	2nd best medallions for dress	1 00
Nellie A. Goorley, Mt. Gilead, O	Best specimen	2 00
Mrs. C. D. Hood, Columbus, O	2nd best specimen	1 00
Nellie A. Goorley, Mt. Gilead, O	Best six doylies	2 00
Mrs. J. M. Coe, Mt. Gilead, O	2nd best six doylies	1 00
	Point Lace—Amateur.	
Mrs. T. G. Fleming, Hanover, O	Best handkerchief	2 00
Mrs. J. M. Coe, Mt. Gilead, O	2nd best handkerchief	1 00
Mrs. T. G. Fleming, Hanover, O	Best collar	2 00
Mrs. M. A. Biddle, Columbus, O	2nd best collar	1 00
Mrs. O. J. Miller, Mt. Gilead, O	Best scarf	2 00
Mrs. J. M. Coe, Mt. Gilead, O	2nd best scarf	1 00
Mrs. T. G. Fleming, Hanover, O	Best dress garniture	2 00
Mrs. O. J. Miller, Mt. Gilead, O	2nd best dress garniture	1 00
Mrs. T. G. Fleming, Hanover, O	Best tie ends	2 00
Mrs. O. J. Miller, Mt. Gilead, O	2nd best tie ends	1 00
Mrs. T. G. Fleming, Hanover, O	Best six protection collars	2 00
Mrs. O. J. Miller, Mt. Gilead, O	2nd best six protection collars	1 00
Mrs. J. M. Coe, Mt. Gilead, O	Best infant's cap	2 00
Nellie A. Goorley, Mt. Gilead, O	2nd best infant's cap	1 00
Mrs. T. G. Fleming, Hanover, O	Best specimen	2 00
Mrs. O. J. Miller, Mt. Gilead, O	2nd best specimen	1 00
Lillian R. State, Springfield, O	Best yoke	2 00
Mrs. O. J. Miller, Mt. Gilead, O	2nd best yoke	1 00
Lillian R. State, Springfield, O	Best specimen point applique	2 00
Mrs. C. M. Nichols, Columbus, O	2nd best specimen point app'que	1 00

WOMAN'S WORK—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
	Lace and Tatting—Amateur.	
Mrs. Bertha Bates, Dayton, O	Best specimen Marie Antoinette	$2 00
Ida Cheney, Toledo, O	2nd best	1 00
Miss Nellie Sligar, Effingham, Ill	Best specimen Reticella	2 00
Ida Cheney, Toledo, O	2nd best specimen Reticella	1 00
Mrs. M. J. Nichols, Bellefontaine, O	2nd best Burges	1 00
Elizabeth Leigh, Groveport, O	Best specimen Duchess	2 00
Mrs. O. A. Spahr, Xenia, O	2nd best specimen Duchess	1 00
Mrs. L. P. Warman, Norwood, O	Best specimen Teneriffe	2 00
Mrs. E. Buck, Cincinnati, O	2nd best specimen Teneriffe	1 00
Mrs. M. Rhinehart, Marion, O	Best specimen wrought guipure	2 00
Mrs. L. P. Warman, Norwood, O	2nd best	1 00
Miss Anna Miller, Quincy, Ill	Best handkerchief	2 00
Gussie H. Greener, Columbus, O	2nd best handkerchief	1 00
Viola R. Fox, Springfield, O	Best tie ends	2 00
Ida Cheney, Toledo, O	2nd best tie ends	1 00
Viola R. Fox, Springfield, O	Best collar	2 00
Mrs. F. A. Hopkins, Findlay, O	2nd best collar	1 00
Viola R. Fox, Springfield, O	Best wrist bag	2 00
Miss Nellie Sligar, Effingham, Ill	2nd best wrist bag	1 00
Miss Anna Miller, Quincy, Ill	Best darned tulle lace	2 00
Nellie A. Goorley, Mt. Gilead, O	2nd best darned tulle lace	1 00
Mrs. L. E. Rockwell, Quincy, Ill	Best darned tulle pillow	2 00
Mrs. Chas. Doughty, Martel, O	2nd best darned tulle pillow	1 00
Mrs. C. M. Nichols, Columbus, O	Best monogram in lace for marking linen	2 00
Miss Nellie Sligar, Effingham, Ill	2nd best	1 00
	Fancy Work—Amateur.	
Amanda Reinicke, Dayton, O	Best huckaback center piece	2 00
Mrs. Jennie Gillett, Columbus, O	2nd best huckaback center piece	1 00
Mrs. E. A. Mullen, Marysville, O	Best shirtwaist	2 00
Mrs. Emma C. Munn, Toledo, O	2nd best shirtwaist	1 00
Mrs. M. Johnson, Dayton, O	Best three protection collars	2 00
Mrs. Jennie Gillett, Columbus, O	2nd best three protection collars	1 00
Amanda Reinicke, Dayton, O	Best shirtwaist set	2 00
Mrs. Chas. W. Reeves, Columbus, O	2nd best shirtwaist set	1 00
Mattie Hall, Lexington, Ky	Best three doylies	2 00
Mrs. E. Buck, Cincinnati, O	2nd best three doylies	1 00
Miss L. V. Johnson, Dayton, O	Best display basketry	3 00
Carrie F. Mosteller, Newark, O	2nd best display basketry	2 00
Mrs. Bertha Bates, Dayton, O	Best couch pillow	2 00
Mrs. Jennie Gillette, Columbus, O	2nd best couch pillow	1 00
Eva B. Mosteller, Newark, O	Best magazine cover	2 00
Miss L. P. Warman, Norwood, O	2nd best magazine cover	1 00
Eva B. Mosteller, Newark, O	Best handkerchief case	2 00
Carrie F. Mosteller, Newark, O	2nd best handkerchief case	1 00
Mattie Hall, Lexington, Ky	Best glove case	2 00
Eva B. Mosteller, Newark, O	2nd best glove case	1 00
Lillian R. State, Springfield, O	Best fancy work bag	2 00
Fanny Jackson, Cedarville, O	2nd best fancy work bag	1 00
Lillian R. State, Springfield, O	Best party bag	2 00
Mrs. Bertha Bates, Dayton, O	2nd best party bag	1 00
Mrs. Chas. W. Reeves, Columbus, O	Best laundry bag	2 00
Miss L. V. Johnson, Dayton, O	2nd best laundry bag	1 00
Amanda Reinicke, Dayton, O	Best shopping bag	2 00
Mrs. Bertha Bates, Dayton, O	2nd best shopping bag	1 00
Carrie F. Mosteller, Newark, O	Best book cover	2 00
Sarah Perrin, Dayton, O	Best sofa pillow	2 00
Amanda Reinicke, Dayton, O	2nd best sofa pillow	1 00
Mrs. C. S. David, Marysville, O	Best pin cushion	2 00
Mrs. Jennie S. Gillette, Columbus, O	2nd best pin cushion	1 00
Charlotte M. Harris, Springfield, O	Best veil case	2 00
Mrs. Bertha Bates, Dayton, O	2nd best veil case	1 00
Louise H. Ackley, Columbus, O	Best opera bag	2 00
Mrs. C. S. David, Marysville, O	2nd best opera bag	1 00
Mrs. M. Johnson, Dayton, O	Best scrap basket	2 00
Mrs. C. S. David, Marysville, O	2nd best two reticules	1 00
Carrie F. Mosteller, Newark, O	Best cravat case	2 00
Mrs. Bertha Bates, Dayton, O	2nd best cravat case	1 00
Mrs. O. A. Spahr, Xenia, O	Best center piece, blue and white	2 00
Mrs. J. E. Harris, Columbus, O	2nd best	1 00
Amanda Reinicke, Dayton, O	Best specimen cornation cord	2 00
Mrs. Emma C. Munn, Toledo, O	2nd best	1 00

WOMAN'S WORK—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
	Delft Embroidery—Amateur.	
Mattie Hall, Lexington, Ky	Best lunch cloth	$2 00
Ida Cheney, Toledo, O	2nd best lunch cloth	1 00
Mrs. E. Buck, Cincinnati, O	Best center piece	2 00
Mrs. L. P. Warman, Norwood, O	2nd best center piece	1 00
Mattie Hall, Lexington, Ky	Best tray cloth	2 00
Mrs. Effie Cunningham, Newark, O	2nd best tray cloth	1 00
Ida Cheney, Toledo, O	Best six doylies	2 00
Mrs. C. M. Nichols, Columbus, O	Best pin cushion	2 00
Mrs. Effie Cunningham, Newark, O	2nd best pin cushion	1 00
Mattie Hall, Lexington, Ky	Best specimen	2 00
Sarah Perrin, Dayton, O	2nd best specimen	1 00
Miss Nellie Sligar, Effingham, Ill	Best display of 5 pieces	3 00
Ida Cheney, Toledo, O	2nd best display of 5 pieces	2 00
	Pyrography—Amateur.	
Mrs. J. W. Newton, Columbus, O	Best chair	2 00
Gladys Taylor, Columbus, O	2nd best chair	1 00
Mrs. J. W. Newton, Columbus, O	Best tabourette	2 00
Margaret Platt, Columbus, O	2nd best tabourette	1 00
Margaret Platt, Columbus, O	Best plate rack	2 00
Stuart B. Rolin, Circleville, O	Best Dutch stand	2 00
Anna W. Bond, Toledo, O	2nd best Dutch stand	1 00
Olive Carroll, Columbus, O	Best handkerchief box or case	2 00
Jessie F. McClane, Columbus, O	2nd best handkerchief box or case	1 00
Margaret Platt, Columbus, O	Best glove box or case	2 00
Charlotte M. Harris, Springfield, O	2nd best glove box or case	1 00
Eva B. Mosteller, Newark, O	Best jewel chest	2 00
Sarah Seymour, Newark, O	2nd best jewel chest	1 00
Charlotte M. Harris, Springfield, O	Best pohtograph box or case	2 00
Margaret Platt, Columbus, O	2nd best photograph box or case	1 00
Ida Cheney, Toledo, O	Best tankard	2 00
Gladys Taylor, Columbus, O	2nd best tankard	1 00
Carrie F. Mosteller, Newark, O	Best book rack	2 00
Sarah Seymour, Newark, O	2nd best book rack	1 00
Mrs. J. W. Newton, Columbus, O	Best placque	2 00
Miss L. V. Johnson, Dayton, O	2nd best placque	1 00
J. C. Lynas, Columbus, O	Best portrait	3 00
J. C. Lynas, Columbus, O	2nd best portrait	2 00
J. C. Lynas, Columbus, O	Best etched ideal head	2 00
Carrie F. Mosteller, Newark, O	2nd best etched ideal head	1 00
Jessie F. McClane, Columbus, O	Best waste paper box	2 00
Gladys Taylor, Columbus, O	2nd best waste paper box	1 00
Gladys Taylor, Columbus, O	Best dresser box	2 00
Jessic F. McClane, Columbus, O	2nd best dresser box	1 00
Carrie F. Mosteller, Newark, O	Best nut bowl	2 00
Miss Emily C. Connell, Portsmouth, O	2nd best nut bowl	1 00
Stuart B. Rolin, Circleville, O	Best pair ping pong bats	2 00
Anna W. Bond, Toledo, O	2nd best pair ping pong bats	1 00
Sarah Seymour, Newark, O	Best card box	2 00
Eva B. Mosteller, Newark, O	2nd best card box	1 00
Mrs. J. W. Newton, Columbus, O	Best picture frame	2 00
Sarah Seymour, Newark, O	2nd best picture frame	1 00
Eva B. Mosteller, Newark, O	Best magazine cover	2 00
Anna W. Bond, Toledo, O	2nd best magazine cover	1 00
Sarah Seymour, Newark, O	Best panel	2 00
Geo. A. Smith, St. Louis, Mo	2nd best panel	1 00
Carrie F. Mosteller, Newark, O	Best shopping bag	2 00
Fanny Jackson, Cedarville, O	2nd best shopping bag	1 00
Sarah Seymour, Newark, O	Best opera bag	2 00
Carrie F. Mosteller, Newark, O	2nd best opera bag	1 00
Carrie F. Mosteller, Newark, O	Best pipe rack	2 00
Charlotte M. Harris, Springfield, O	2nd best pipe rack	1 00
E. I. Shapter, Columbus, O	Best specimen wood	2 00
J. C. Lynas, Columbus, O	2nd best specimen wood	1 00
Stuart B. Rolin, Circleville, O	Best specimen leather	2 00
Mrs. J. W. Newton, Columbus, O	2nd best specimen leather	1 00
Eva B. Mosteller, Newark, O	Best specimen velvet	2 00
Anna W. Bond, Toledo, O	2nd best specimen velvet	1 00
Mrs. J. W. Newton, Columbus, O	Best display of 5 pieces	5 00
Carrie F. Mosteller, Newark, O	2nd best display of 5 pieces	3 00
	Decorative Art Work—Amateur.	
Hester C. Harris, Springfield, O	Best picture frame	2 00
Alice M. Hippel, Delaware, O	2nd best picture frame	1 00
Carrie F. Mosteller, Newark, O	Best placque	2 00
Miss Emily C. Connell, Portsmouth, O	2nd best placque	1 00
Eva B. Mosteller, Newark, O	Best book rack	2 00
Alice M. Hippel, Delaware, O	2nd best book rack	1 00
Virginia Wiltberger, Columbus, O	Best couch pillow	2 00

WOMAN'S WORK—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount
	Decorative Art Work—Amateur.	
Miss L. V. Johnson, Dayton, O	2nd best couch pillow	$1 00
Eva B. Mosteller, Newark, O	Best handkerchief case or box	2 00
Charlotte M. Harris, Springfield, O	2nd best handkerchief case or box	1 00
Carrie F. Mosteller, Newark, O	Best glove case or box	2 00
Miss Edith Huntington, Columbus, O	2nd best glove case or box	1 00
Charlotte M. Harris, Springfield, O	Best letter case	2 00
Eva B. Mosteller, Newark, O	Best jewel case or chest	2 00
Hester C. Harris, Springfield, O	2nd best jewel case or chest	1 00
Mrs. Bertha Bates, Dayton, O	Best card case	2 00
Carrie F. Mosteller, Newark, O	2nd best card case	1 00
Ida Cheney, Toledo, O	Best foot stool	2 00
Eva B. Mosteller, Newark, O	Best book cover	2 00
Eva B. Mosteller, Newark, O	Best magazine cover	2 00
Charlotte M. Harris, Springfield, O	2nd best magazine cover	1 00
Hester C. Harris, Springfield, O	Best photograph case	2 00
Mrs. Bertha Bates, Dayton, O	2nd best photograph case	1 00
Fanny Jackson, Cedarville, O	Best blotting pad	2 00
Charlotte M. Harris, Springfield, O	2nd best blotting pad	1 00
Charlotte M. Harris, Springfield, O	Best opera bag	2 00
Carrie F. Mosteller, Newark, O	2nd best opera bag	1 00
Eva B. Mosteller, Newark, O	Best shopping bag	2 00
Mrs. J. E. Harris, Columbus, O	2nd best shopping bag	1 00
	Art Needlework—Amateur.	
Mrs. J. E. Harris, Columbus, O	Best lunch cloth	3 00
Mrs. E. Buck, Cincinnati, O	2nd best lunch cloth	2 00
Mrs. L. K. Roney, Troy, O	Best specimen	3 00
Sarah Perrin, Dayton, O	2nd best specimen	2 00
Mrs. E. C. Hamilton, Washington C. H., O	Best table cover, in color	3 00
Mrs. T. S. Murtha, Columbus, O	2nd best table cover, in color	2 00
Charlotte M. Harris, Springfield, O	Best center piece, 24-inch	3 00
Mrs. Ross Bailey, Columbus, O	2nd best center piece, 24-inch	2 00
Mrs. E. Buck, Cincinnati, O	Best fire screen	3 00
Mattie Hall, Lexington, Ky	Best handkerchief case	2 00
Mary V. Smucker, Newark, O	2nd best handkerchief case	1 00
Mattie Hall, Lexington, Ky	Best glove case	2 00
Mary V. Smucker, Newark, O	2nd best glove case	1 00
Mrs. Effie Cunningham, Newark, O	Best toilet cushion	2 00
Mrs. L. K. Roney, Troy, O	2nd best toilet cushion	1 00
Mary V. Smucker, Newark, O	Best dresser cover	2 00
Lillian R. State, Springfield, O	2nd best dresser cover	1 00
Mattie Hall, Lexington, Ky	Best tray cloth	2 00
Mrs. Effie Cunningham, Newark, O	2nd best tray cloth	1 00
Mattie Hall, Lexington, Ky	Best sideboard cover	2 00
Mrs. Effie Cunningham, Newark, O	2nd best sideboard cover	1 00
Mrs. Kate M. Dean, Logan, O	Best center piece, lace and embroidery	2 00
Sarah Perrin, Dayton, O	2nd best	1 00
Mattie Hall, Lexington, Ky	Best center piece, 18-inch	2 00
Mrs. J. E. Harris, Columbus, O	2nd best centerpiece, 18-inch	1 00
Nellie A. Goorley, Mt. Gilead, O	Best table cover	2 00
Mrs. E. Buck, Cincinnati, O	2nd best table cover	1 00
Mattie Hall, Lexington, Ky	Best six, 12-inch doylies	2 00
Mrs. Effie Cunningham, Newark, O	2nd best six, 12- inch doylies	1 00
Charlotte M. Harris, Springfield, O	Best three cake doylies	2 00
Mrs. Kate M. Dean, Logan, O	2nd best three cake doylies	1 00
Mrs. E. Buck, Cincinnati, O	Best book cover	2 00
Charlotte M. Harris, Springfield, O	2nd best book cover	1 00
Mrs. Effie Cunningham, Newark, O	Best magazine cover	2 00
Mrs. C. Ackley, Columbus, O	Best party bag	2 00
Miss L. V. Johnson, Dayton, O	2nd best party bag	1 00
Miss M. Johnson, Dayton, O	Best shopping bag	2 00
Mrs. Emma C. Munn, Toledo, O	2nd best shopping bag	1 00
Mrs. Effie Cunningham, Newark, O	Best ottoman	2 00
Mrs. Geo. E. Brittain, Dayton, O	Best four doylies, four kinds embroidery	2 00
Nellie A. Goorley, Mt. Gilead, O	Best specimen Bulgarian	2 00
Miss L. P. Warman, Norwood, O	2nd best specimen Bulgarian	1 00
Mrs. Bertha Bates, Dayton, O	Best specimen Colonial	2 00
Miss M. Johnson, Dayton, O	Best specimen Peruvian	2 00
Miss L. V. Johnson, Dayton, O	2nd best specimen Peruvian	1 00
Louise H. Ackley, Columbus, O	Best specimen Mount-mellick	2 00
Amanda Reinicke, Dayton, O	2nd best specimen Mount-mell'k	1 00
Mrs. Emma C. Munn, Toledo, O	2nd best specimen Florentine	1 00
Miss Fannie Fearn, Groveport, O	Best sofa pillow	2 00
Mrs. E. Buck, Cincinnati, O	2nd best sofa pillow	1 00
Mrs. Geo. E. Brittain, Dayton, O	Best waist	2 00
Mattie Hall, Lexington, Ky	Best six collars	2 00
Charlotte M. Harris, Springfield, O	2nd best six collars	1 00

WOMAN'S WORK—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
	Art Needlework—Amateur.	
Mrs. Jennie S. Gillette, Columbus, O	Best stock	$2 00
Mrs. Bertha Bates, Dayton, O	2nd best stock	1 00
Mrs. Bertha Bates, Dayton, O	Best shirtwaist set	2 00
Amanda Reinicke, Dayton, O	2nd best shirtwaist set	1 00
Mrs. C. M. Nichols, Columbus, O	Best stockings	2 00
Mrs. Emma C. Munn, Toledo, O	Best display of art needlework	10 00
Mrs. J. E. Harris, Columbus, O	2nd best	5 00
	Art Needlework—Professional.	
Miss Nellie Sliger, Effingham, Ill.	Best table set	7 00
Ida Cheney, Toledo, O	2nd best table set	5 00
Mrs. A. L. Hyson, Logan, O	Best single specimen	5 00
Mrs. C. R. Creamer, Columbus, O	2nd best single specimen	3 00
Mrs. A. L. Hyson, Logan, O	Best display of 8 pieces	10 00
Miss Nellie Sligar, Effingham, Ill	2nd best display of 8 pieces	5 00
	Pyrography—Professional.	
Price L. Hampton, Columbus, O	Best specimen	7 00
Mrs. A. L. Hyson, Logan, O	2nd best specimen	5 00
Miss Nellie Sligar, Effingham, Ill	Best chair	5 00
Price L. Hampton, Columbus, O	2nd best chair	3 00
Miss Nellie Sligar, Effingham, Ill	Best display	10 00
Ida Cheney, Toledo, O	2nd best display	5 00
	China Painting—Amateur.	
Theresa E. Turney, Columbus, O	Best chocolate set	3 00
Mrs. Geo. E. Brittain, Dayton, O	2nd best chocolate set	1 00
Mrs. W. H. Thomas, Springfield, O	Best ice cream set	3 00
D. E. Whitsit, Columbus, O	2nd best ice cream set	1 00
Theresa E. Turney, Columbus, O	Best six small plates	3 00
Mrs. W. H. Thomas, Springfield, O	2nd best six small plates	1 00
Grace Guthridge, Columbus, O	Best six large plates	3 00
Mrs. John B. Linn, Springfield, O	2nd best six large plates	1 00
Aurelia Brown, Columbus, O	Best six cups and saucers	2 00
Mrs. Anna L. Weisman, Columbus, O	2nd best six cups and saucers	1 00
Mrs. C. H. Lefferson, Columbus, O	Best teapot, sugar and creamer	2 00
Mrs. Anna Baird, Columbus, O	2nd best teapot, sugar and creamer	1 00
J. C. Lynas, Columbus, O	Best specimen of figure	2 00
Mrs. Anna Baird, Columbus, O	2nd best specimen of figure	1 00
Miss Helen Bright, Columbus, O	Best vase	2 00
Mrs. A. J. Pray, Columbus, O	2nd best vase	1 00
E. Madge Beatty, Columbus, O.	Best tankard or claret pitcher and mug	2 00
Mildred Williams, Columbus, O	2nd best tankard or claret pitcher and mug.	1 00
Mrs. John B. Linn, Springfield, O	Best jardiniere	2 00
D. E. Whitsit, Columbus, O.	2nd best jardiniere	1 00
Grace Guthridge, Columbus, O	Best placque	2 00
D. E. Whitsit, Columbus, O	2nd best placque	1 00
Mrs. Geo. E. Brittain, Dayton, O	Best specimen china	2 00
J. C. Lynas, Columbus, O	2nd best specimen china	1 00
Grace Guthridge, Columbus, O	Best specimen paste work	2 00
Mrs. Lida Ellis, Columbus, O	2nd best specimen paste work	1 00
Mrs. Geo. E. Brittain, Dayton, O	Best salad dish	2 00
Mrs. W. H. Thomas, Springfield, O	2nd best salad dish	1 00
Mrs. Anna Baird, Columbus, O	Best cake plate	2 00
Grace Guthridge, Columbus, O	2nd best cake plate	1 00
Mildred Williams, Columbus, O	Best tray	2 00
Grace Guthridge, Columbus, O	2nd best tray	1 00
Miss Helen Bright, Columbus, O	Best display of china painting	7 00
Mrs. John B. Linn, Springfield, O	2nd best display of china painting	4 00
	China Painting—Professional.	
Lura C. Davis, Columbus, O	Best lemonade pitcher	3 00
Flora Sook, Newark, O	2nd best lemonade pitcher	2 00
Lura C. Davis, Columbus, O	Best panel	3 00
Charlene Erb, Columbus, O	2nd best panel	2 00
Lura C. Davis, Newark, O	Best placque	3 00
Geo. S. Hyde, Piqua, O	2nd best placque	2 00
Lura C. Davis, Columbus, O	Best table top	3 00
M. E. Wiltberger, Columbus, O	2nd best table top	2 00
Charlene Erb, Columbus, O	Best conventional design	3 00
Lura C. Davis, Columbus, O	2nd best conventional design	2 00
Lura C. Davis, Columbus, O	Best tankard or claret pitcher and mug	3 00
Mrs. L. K. Roney, Troy, O	2nd best tankard or claret pitcher and mug.	2 00
M. E. Wiltberger, Columbus, O	Best punch bowl	3 00
Charlene Erb, Columbus, O	2nd best punch bowl	2 00
Charlene Erb, Columbus, O	Best vase	3 00
Mrs. L. K. Roney, Troy, O	2nd best vase	2 00

WOMAN'S WORK—Concluded.

Owner's Name and Postoffice.	Name of Article.	Amount.
	China Painting—Professional.	
Charlene Erb, Columbus, O	Best six cups and saucers	$3 00
M. E. Wiltberger, Columbus, O	2nd best six cups and saucers	2 00
Charlene Erb, Columbus, O	Best six large plates	3 00
M. E. Wiltberger, Columbus, O	2nd best six large plates	2 00
M. E. Wiltberger, Columbus, O	Best six small plates	3 00
Mrs. Emma C. Munn, Toledo, O	2nd best six small plates	2 00
Lura C. Davis, Columbus, O	Best specimen of enamel	3 00
Mrs. L. K. Roney, Troy, O	2nd best specimen of enamel	2 00
Lura C. Davis, Columbus, O	Best specimen of paste work	3 00
M. E. Wiltberger, Columbus, O	2nd best specimen of paste work	2 00
Mrs. L. K. Roney, Troy, O	Best jardiniere	3 00
Lura C. Davis, Columbus, O	2nd best jardiniere	2 00
Lura C. Davis, Columbus, O	Best display of china painting	10 00
M. E. Wiltberger, Columbus, O	2nd best display of china painting	5 00
	China Painting—Professional Figure Work.	
Elizabeth Leigh, Groveport, O	Best portrait	3 00
H. W. Barnitz, Columbus, O	2nd best portrait	2 00
Flora Sook, Newark, O	Best figure	3 00
Elizabeth Leigh, Groveport, O	2nd best figure	2 00
Flora Sook, Newark, O	Best placque	3 00
Elizabeth Leigh, Groveport, O	2nd best placque	2 00
Flora Sook, Newark, O	Best panel	3 00
Geo. S. Hyde, Piqua, O	2nd best panel	2 00
Elizabeth Leigh, Groveport, O	Best vase	3 00
Mrs. L. K. Roney, Troy, O	2nd best vase	2 00
Flora Sook, Newark, O	Best stein	3 00
Mrs. J. A. Hopkins, Dayton, O	2nd best stein	2 00
Elizabeth Leigh, Groveport, O	Best miniature	3 00
H. W. Barnitz, Columbus, O	2nd best miniature	2 00
Flora Sook, Newark, O	Best display of china painting	10 00
Mrs. L. K. Roney, Troy, O	2nd best display of china painting	5 00

PRESERVES, PICKLES, ETC.

Owner's Name and Postoffice.	Name of Article.	Amount.
Mrs. W. A. Calhoun, Newcomerstown, O	Best canned tomatoes	$1 00
Mrs. L. Trimble, Marion, O	2nd best canned tomatoes	50
Mrs. Henry Bieber, Delaware, O	Best canned blackberries	1 00
Mrs. W. H. Snedeker, Delaware, O	2nd best canned blackberries	50
Mrs. L. Trimble, Marion, O	Best canned raspberries	1 00
Mrs. M. Rhinehart, Marion, O	2nd best canned raspberries	50
Mrs. E. G. Taggert, Delaware, O	Best canned peaches	1 00
Mrs. M. Rhinehart, Marion, O	2nd best canned peaches	50
Mrs. M. B. Clutter, Pataskala, O	Best canned pears	1 00
Mrs. O. C. Stockman, Prospect, O	2nd best canned pears	50
Mrs. M. B. Clutter, Pataskala, O	Best canned apples	1 00
Mrs. L. Trimble, Marion, O	2nd best canned apples	50
Mrs. Henry Bieber, Delaware, O	Best canned quinces	1 00
Mary Stewart, Jacksontown, O	2nd best canned quinces	50
Mrs. M. Rhinehart, Marion, O	Best canned strawberries	1 00
Mrs. L. Trimble, Marion, O	2nd best canned strawberries	50
Mrs. L. Trimble, Marion, O	Best canned cherries	1 00
Mrs. Henry Bieber, Delaware, O	2nd best canned cherries	50
Mrs. Mary E. Sharp, Columbus, O	Best canned gooseberries	1 00
Mrs. M. B. Clutter, Pataskala, O	2nd best canned gooseberries	50
Mrs. Henry Bieber, Delaware, O	Best canned currants	1 00
Mrs. L. Trimble, Marion, O	2nd best canned currants	50
Susie E. Perry, Columbus, O	Best canned grapes	1 00
Mrs. M. B. Clutter, Pataskala, O	2nd best canned grapes	50
Mrs. H. E. Stein, Columbus, O	Best canned plums	1 00
Mrs. Chas. Doughty, Martel, O	2nd best canned plums	50
Mrs. M. B. Clutter, Pataskala, O	Best canned beans	1 00
Mrs. W. A. Calhoun, Newcomerstown, O	2nd best canned beans	50
Mrs. L. Trimble, Marion, O	Best canned rhubarb	1 00
Mrs. M. B. Clutter, Pataskala, O	Best canned corn, ear or other	1 00
Miss Mamie Bieber, Delaware, O	Best blackberry jelly	1 00
Lucy Taggart, Delaware, O	2nd best blackberry jelly	50
Mrs. M. B. Clutter, Pataskala, O	Best cherry jelly	1 00
Mrs. Mary Pearce, North Ridgeville, O	2nd best cherry jelly	50
Miss Iva Edwards, Delaware, O	Best cranberry jelly	1 00
Mrs. Henry Bieber, Delaware, O	2nd best cranberry jelly	50

PRESERVES, PICKLES, ETC.—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
Miss Lida Crickard, Delaware, O	Best grape jelly	$1 00
Mrs. Mary Pearce, North Ridgeville, O	2nd best grape jelly	50
Mrs. Mary Pearce, North Ridgeville, O	Best raspberry jelly	1 00
Mrs. W. H. Snedeker, Delaware, O	2nd best raspberry jelly	50
Mrs. M. B. Clutter, Pataskala, O	Best strawberry jelly	1 00
Lucy Taggart, Delaware, O	2nd best strawberry jelly	50
Mrs. M. B. Clutter, Pataskala, O	Best apple jelly	1 00
Susie E. Perry, Columbus, O	2nd best apple jelly	50
Mrs. W. H. Snedeker, Delaware, O	Best pear jelly	1 00
Mrs. M. B. Clutter, Pataskala, O	2nd best pear jelly	50
Lucy Taggart, Delaware, O	Best crabapple jelly	1 00
Mrs. J. B. Stewart, Thornville, O	2nd best crabapple jelly	50
Mrs. W. H. Snedeker, Delaware, O	Best currant jelly	1 00
Mrs. Henry Bieber, Delaware, O	2nd best currant jelly	50
Miss Lida Crickard, Delaware, O	Best peach jelly	1 00
Mrs. A. F. Armstrong, Columbus, O	2nd best peach jelly	50
Mrs. M. B. Clutter, Pataskala, O	Best quince jelly	1 00
Mrs. J. B. Stewart, Thornville, O	2nd best quince jelly	50
Susie E. Perry, Columbus,O	Best plum jelly	1 00
Mrs. L. Trimble, Marion, O	2nd best plum jelly	50
Mrs. M. B. Clutter, Pataskala, O	Best lemon jelly	1 00
Mrs. L. Trimble, Marion, O	2nd best lemon jelly	50
Mrs. A. F. Armrstong, Columbus, O	Best pineapple jelly	1 00
Mrs. M. B. Clutter, Pataskala, O	2nd best pineapple jelly	50
Mrs. L. Trimble, Marion, O	Best rhubarb jelly	1 00
Lucy Taggart, Delaware, O	2nd best rhubarb jelly	50
Mrs. W. H. Snedeker, Delaware, O	Best gooseberry jelly	1 00
Miss Iva Edwards, Delaware, O	2nd best gooseberry jelly	50
Miss Minnie Bieber, Delaware, O	Best preserved quinces	2 00
Mrs. M. B. Clutter, Pataskala, O	2nd best preserved quinces	1 00
Mrs. Henry Bieber, Delaware, O	Best preserved pears	2 00
Mrs. M. B. Clutter, Pataskala, O	2nd best preserved pears	1 00
Mrs. M. B. Clutter, Pataskala, O	Best preserved apples	2 00
Mrs. Henry Bieber, Delaware, O	2nd best preserved apples	1 00
Mrs. L. Trimble, Marion, O	Best preserved plums	2 00
Mrs. Henry Bieber, Delaware, O	2nd best preserved plums	1 00
Mrs L. Trimble, Marion, O	Best preserved cherries	2 00
Mrs M. B. Clutter, Pataskala, O	2nd best preserved cherries	1 00
Mary Stewart Jacksontown, O	Best preserved crabapples	2 00
Mrs. Henry Bieber, Delaware,O	2nd best preserved crabapples	1 00
Mrs. M. B. Clutter, Pataskala, O	Best preserved grapes	2 00
Mrs. L. Trimble, Marion, O	2nd best preserved grapes	1 00
Mrs. Henry Bieber, Delaware, O	Best preserved strawberries	2 00
Mrs. M. B. Clutter, Pataskala, O	2nd best preserved strawberries	1 00
Mrs. Henry Bieber, Delaware, O	Best preserved blackberries	2 00
Miss Minnie Bieber, Delaware, O	2nd best preserved blackberries	1 00
Mrs. E. G. Taggart, Delaware, O	Best preserved peaches	2 00
Mrs. M. B. Clutter, Pataskala, O	2nd best preserved peaches	1 00
Mrs. W. H. Snedeker, Delaware, O	Best preserved currants	2 00
Mrs. E. G. Taggart, Delaware, O	2nd best preserved currants	1 00
Susie E. Perry, Columbus, O	Best preserved gooseberries	2 00
Mrs. M. B. Clutter, Pataskala, O	2nd best preserved gooseberries	1 00
Mrs. M. B. Clutter, Pataskala, O	Best preserved melons	2 00
Mrs. E. G. Taggart, Delaware, O	2nd best preserved melons	1 00
Mary Stewart, Jacksontown, O	Best preserved pineapples	2 00
Mrs. M. B. Clutter, Pataskala, O	2nd best preserved pineapples	1 00
Mrs. M. B. Clutter, Pataskala, O	Best preserved cranberries	2 00
Mrs. Henry Bieber, Delaware, O	2nd best preserved cranberries	1 00
Mrs. L. Trimble, Marion, O	Best pickled cucumbers	2 00
Mrs. M. Rhinehart, Marion, O	2nd best pickled cucumbers	1 00
Miss Minnie Bieber, Delaware,O	Best pickled peaches	2 00
Mrs. M. B. Clutter, Pataskala, O	2nd best pickled peaches	1 00
Mrs. E. G. Taggart, Delaware, O	Best pickled pears	2 00
Mrs. M. B. Clutter, Pataskala, O	2nd best pickled pears	1 00
Mrs. Henry Bieber, Delaware, O	Best pickled tomatoes	2 00
Mrs. W. H. Snedeker, Delaware, O	2nd best pickled tomatoes	1 00
Mrs. J. B. Stewart, Thornville, O	Best pickled melon mangoes	2 00
Miss Minnie Bieber, Delaware, O	2nd best pickled melon mangoes	1 00
Mary Stewart, Jacksontown, O	Best pickled pepper mangoes	2 00
Mrs. W. H. Snedeker, Delaware, O	2nd best pickled pepper mangoes	1 00
Mrs. E. G. Taggart, Delaware, O	Best pickled melons	2 00
Mrs. J. B. Stewart, Thornville, O	2nd best pickled melons	1 00
Mrs. M. Rhinehart, Marion, O	Best pickled onions	2 00
Miss M. Johnson, Dayton, O	2nd best pickled onions	1 00
Mrs. M. B. Clutter, Pataskala, O	Best pickled gherkins	2 00
Mrs. L. Trimble, Marion, O	2nd best pickled gherkins	1 00
Mrs. M. B. Clutter, Pataskala, O	Best pickled cauliflower	2 00
Mrs. L. Trimble, Marion, O	2nd best pickled cauliflower	1 00
Mrs. M. B. Clutter, Pataskala, O	Best mixed pickles	2 00
Lucy Taggart, Delaware, O	2nd best mixed pickles	1 00
Mrs. M. B. Clutter, Pataskala, O	Best tomato catsup	2 00

PRESERVES, PICKLES, ETC.—Concluded.

Owner's Name and Postoffice.	Name of Article.	Amount.
Susie E. Perry, Columbus, O	2nd best tomato catsup	$1 00
Mrs. E. G. Taggart, Delaware, O	Best cucumber catsup	2 00
Miss Minnie Bieber, Delaware, O	2nd best cucumber catsup	1 00
Mrs. M. B. Clutter, Pataskala, O	Best cold tomato catsup	2 00
Mrs. W. H. Snedeker, Delaware, O	2nd best cold tomato catsup	1 00
Miss Minnie Bieber, Delaware, O	Best chili sauce	2 00
Mrs. W. H. Snedeker, Delaware, O	2nd best chilli sauce	1 00
Mrs. E. G. Taggart, Delaware, O	Best chowchow	2 00
Mary Stewart, Jacksontown, O	2nd best chowchow	1 00
Mrs. M. B. Clutter, Pataskala, O	Best cucumber relish	1 00
Mrs. M. Rhinehart, Marion, O	2nd best cucumber relish	50
Mrs. J. B. Stewart, Thornville, O	Best peach butter	2 00
Mrs. E. G. Taggart, Delaware, O	2nd best peach butter	1 00
Mrs. J. B. Stewart, Thornville, O	Best apple butter	2 00
Mrs. M. B. Clutter, Pataskala, O	2nd best apple butter	1 00
Mrs. W. H. Snedeker, Delaware, O	Best quince butter	2 00
Mrs. Henry Bieber, Delaware, O	2nd best quince butter	1 00
Mrs. W. H. Snedeker, Delaware, O	Best plum butter	2 00
Mrs. Henry Bieber, Delaware, O	2nd best plum butter	1 00
Mrs. Henry Bieber, Delaware, O	Best pear butter	2 00
Mrs. Chas. Doughty, Martel, O	2nd best pear butter	1 00
Mrs. Henry Bieber, Delaware, O	Best grape butter	2 00
Mrs. W. H. Snedeker, Delaware, O	2nd best grape butter	1 00
Miss Minnie Bieber, Delaware, O	Best peach marmalade	2 00
Mrs. Henry Bieber, Delaware, O	2nd best peach marmalade	1 00
Mrs. Henry Bieber, Delaware, O	Best quince marmalade	2 00
Mrs. E. G. Taggart, Delaware, O	2nd best quince marmalade	1 00
Mrs. J. B. Stewart, Thornville, O	Best crabapple marmalade	2 00
Miss Minnie Bieber, Delaware, O	2nd best crabapple marmalade	1 00
Mrs. M. Rhinehart, Marion, O	Best orange marmalade	2 00
Miss Minnie Bieber, Delaware, O	2nd best orange marmalade	1 00
Mary Stewart, Jacksontown, O	Best pear marmalade	2 00
Mrs. Henry Bieber, Delaware, O	2nd best pear marmalade	1 00
Mrs. M. B. Clutter, Pataskala, O	Best and largest variety of canned fruit	5 00
Mrs. L. Trimble, Marion, O	2nd best and largest variety of canned fruit	3 00
Mrs. M. B. Clutter, Pataskala, O	Best and largest variety of pickles	5 00
Mrs. M. Rhinehart, Marion, O	2nd best and largest variety of pickles	3 00
Mrs. M. B. Clutter, Pataskala, O	Best and largest variety of jellies	5 00
Mrs. L. Trimble, Marion, O	2nd best and largest variety of jellies	3 00
Mary Stewart, Jacksontown, O	Best and largest variety of butters	5 00
Mrs. M. B. Clutter, Pataskala, O	2nd best and largest variety of butters	3 00
Mrs. L. Trimble, Marion, O	Best and largest variety of marmalades	5 00
Mrs. M. B Clutter, Pataskala, O	2nd best and largest variety of marmalades	3 00

CEREAL FOODS.

Owner's Name and Postoffice.	Name of Article.	Amount.
	Bread.	
Mrs. G. B. Norris, Columbus, O	Best yeast bread	$2 00
Mrs. N. A. Thompson, Columbus, O	2nd best yeast bread	1 00
Mrs. Jennie Sanders, Columbus, O	Best salt-rising bread	2 00
Jennie Cherry, Newark, O	2nd best salt-rising bread	1 00
Mrs. M. B. Clutter, Pataskala, O	Best corn bread	2 00
Mrs. Groom, Columbus, O	2nd best corn bread	1 00
Mary Stewart, Jacksontown, O	Best rye bread	2 00
Mrs. M. B. Clutter, Pataskala, O	2nd best rye bread	1 00
Mrs. M. B. Clutter, Pataskala, O	Best brown bread	2 00
Mrs. G. B. Norris, Columbus, O	2nd best brown bread	1 00
	Loaf Cakes.	
Mary Stewart, Jacksontown, O	Best black fruit	3 00
Mrs. M. B. Clutter, Pataskala, O	2nd best black fruit	2 00
Mrs. J. B. Stewart, Thornville, O	Best white fruit	2 00
Miss Minnie Bieber, Delaware, O	2nd best white fruit	1 00
Mrs. N. A. Thompson, Columbus, O	Best white	2 00
Lucy Taggart, Delaware, O	2nd best white	1 00
Miss Iva Edwards, Delaware, O	Best marble	2 00
Mrs. J. B. Stewart, Thornville, O	2nd best marble	1 00
Miss Minnie Bieber, Delaware, O	2nd best pound	1 00
Mrs. J. B. Stewart, Thornville, O	Best coffee	2 00
Mrs. E. G. Taggart, Delaware, O	2nd best coffee	1 00
Lucy Taggart, Delaware, O	Best nut	2 00
Mrs. M. B. Clutter, Pataskala, O	2nd best nut	1 00
Anna S. Morton, Springfield, O	Best angel	2 00
Mary Stewart, Jacksontown, O	2nd best angel	1 00
Mrs. Henry Bieber, Delaware, O	Best sponge	2 00
Mrs. A. F. Armstrong, Columbus, O	2nd best sponge	1 00
Mrs. A. F. Armstrong, Columbus, O	Best sunshine	2 00
Mrs. Geo. E. Brittain, Dayton, O	2nd best sunshine	1 00

CEREAL FOODS—Concluded.

Owner's Name and Postoffice.	Name of Article.	Amount.
	Layer Cakes.	
Anna S. Morton, Springfield, O	Best chocolate	$2 00
Miss Iva Edwards, Delaware, O	2nd best chocolate	1 00
Sarah Semmis, Westerville, O	Best caramel	2 00
Miss Minnie Bieber, Delaware, O	2nd best caramel	1 00
Anna S. Morton, Springfield, O	Best cocoanut	2 00
Lucy Taggart, Delaware, O	2nd best cocoanut	1 00
Miss Minnie Bieber, Delaware, O	2nd best almond	1 00
Mary Stewart, Jacksontown, O	Best devil	2 00
Mrs. Henry Bieber, Delaware, O	2nd best devil	1 00
Mrs. Henry Bieber, Delaware, O	Best fignut	2 00
Mary Stewart, Jacksontown, O	2nd best fignut	1 00
Miss Lida Crickard, Delaware, O	Best ribbon	2 00
Sarah Semmis, Westerville, O	2nd best ribbon	1 00
Anna S. Morton, Springfield, O	Best any other kind	2 00
Mrs. A. F. Armstrong, Columbus, O	2nd best any other kind	1 00
	Miscellaneous.	
Miss Minnie Bieber, Delaware, O	Best one dozen plain snaps	1 00
Mrs. Henry Bieber, Delaware, O	2nd best one dozen plain snaps	50
Mrs. M. B. Clutter, Pataskala, O	Best one dozen cookies	1 00
Marie Davis, Westerville, O	2nd best one dozen cookies	50
Mrs. W. H. Snedeker, Delaware, O	Best one dozen doughnuts	1 00
Mrs. M. B. Clutter, Pataskala, O	2nd best one dozen doughnuts	50
Mrs. M. B. Clutter, Pataskala, O	Best one dozen love pies	1 00
Mrs. W. A. Thompson, Columbus, O	Best one dozen gingersnaps	1 00
Mrs. W. H. Snedeker, Delaware, O	2nd best one dozen gingersnaps	50
	Confections—Home-made.	
Lucy Taggart, Delaware, O	Best pound French creams	1 00
Mrs. M. B. Clutter, Pataskala, O	2nd best pound French creams	50
Jennie Cherry, Newark, O	Best pound fudges	1 00
Mrs. M. B. Clutter, Pataskala, O	2nd best pound fudges	50
F. J. Bartholomew, Middlefield, O	Best pound maple balls	1 00
Lucy Taggart, Delaware O	2nd best pound maple balls	50
Viola R. Fox, Springfield, O	Best pound chocolate creams	1 00
Miss Minnie Bieber, Delaware, O	2nd best pound chocolate creams	50
Mrs. M. B. Clutter, Pataskala, O	Best pound nut candy	1 00
Gussie H. Greener, Columbus, O	2nd best pound nut candy	50
Mrs. M. B. Clutter, Pataskala, O	Best pound taffy	1 00
Marie Davis, Westerville, O	2nd best pound taffy	50
Jennie Cherry, Newark, O	Best pound chocolate caramels	1 00
Mrs. M. B. Clutter, Pataskala, O	2nd best pound chocolate caramels	50
Mary Stewart, Jacksontown, O	Best pound candied lemon or orange peel	1 00
Mrs. J. B. Stewart, Thornville, O	2nd best pound candied lemon or orange peel	50
Jennie Cherry, Newark, O	Best pound almond macaroons	1 00
Miss Minnie Bieber, Delaware, O	2nd best pound almond macaroons	50
Miss Minnie Bieber, Delaware, O	Best pound hickorynut macaroons	1 00
Mrs. M. B. Clutter, Pataskala, O	2nd best pound hickorynut macaroons	50

PAINTINGS, DRAWINGS, ETC.

OPEN TO ALL.

Owner's Name and Postoffice.	Name of Article.	Amount.
	Oil Paintings.	
Elizabeth Heil, Groveport, O	Best portrait	$8 00
H. W. Barnitz, Columbus, O	2nd best portrait	4 00
S. Kiefer, Columbus, O	Best animal study	8 00
H. W. Barnitz, Columbus, O	2nd best animal study	4 00
H. W. Barnitz, Columbus, O	Best full length figure	5 00
Elizabeth Heil, Groveport, O	2nd best full length figure	3 00
W. J. Norris, Columbus, O	Best landscape	5 00
S. Kiefer, Columbus, O	2nd best landscape	3 00
Maud Myers, Columbus, O	Best fruit piece	5 00
Mary W. Russell, Springfield, O	2nd best fruit piece	3 00
Maud Myers, Columbus, O	Best flower piece	5 00
Lura E. Patterson, Athens, O	2nd best flower piece	3 00
H. W. Barnitz, Columbus, O	Best still life study	5 00
Maud Myers, Columbus, O	2nd best still life study	3 00
Elizabeth Heil, Groveport, O	Best exhibition oil paintings	15 00
Maud Myers, Columbus, O	2nd best exhibition oil paintings	5 00

PAINTINGS, DRAWINGS, ETC.—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
	Water Color Paintings.	
W. J. Norris, Columbus, O	Best portrait	$5 00
H. W. Barnitz, Columbus, O	2nd best portrait	3 00
W. J. Norris, Columbus, O	Best full length figure	4 00
Miss Daisy M. Scott, Columbus, O	2nd best full length figure	2 00
Geo. W. Bellows, Columbus, O	Best landscape	4 00
W. J. Norris, Columbus, O	2nd best landscape	2 00
Neva J. Collins, Columbus, O	Best fruit piece	4 00
Miss Daisy M. Scott, Columbus, O	2nd best fruit piece	2 00
Charlene Erb, Columbus, O	Best flower piece	4 00
Mrs. L. K. Roney, Troy, O	2nd best flower piece	2 00
H. W. Barnitz, Columbus, O	Best marine study	4 00
Mary W. Russell, Springfield, O	2nd best marine study	2 00
Neva J. Collins, Columbus, O	Best still life study	4 00
H. W. Barnitz, Columbus, O	2nd best still life study	2 00
Charlene Erb, Columbus, O	Best exhibition paintings, water colors	10 00
H. W. Barnitz, Columbus, O	2nd best exhibition paintings, water colors.	5 00
	Pastels.	
H. W. Barnitz, Columbus, O	Best portrait	3 00
Maud Myers, Columbus, O	2nd best portrait	2 00
H. W. Barnitz, Columbus, O	Best landscape	3 00
Mary W. Russell, Springfield, O	2nd best landscape	2 00
H. W. Barnitz, Columbus, O	Best animal	3 00
Mrs. L. K. Roney, Troy, O	2nd best animal	2 00
Mrs. L. K. Roney, Troy, O	Best game	3 00
H. W. Barnitz, Columbus, O	2nd best game	2 00
H. W. Barnitz, Columbus, O	Best fruit	3 00
Mary W. Russell, Springfield, O	2nd best fruit	2 00
Lura E. Patterson, Athens, O	Best still life	3 00
Mary W. Russell, Springfield, O	2nd best still life	2 00
Lura E. Patterson, Athens, O	Best figure	3 00
W. J. Norris, Columbus, O	2nd best figure	2 00
	Drawings.	
A. B. Slower, Trenton, N. J	Best portrait, crayon or charcoal	2 00
Maud Myers, Columbus, O	2nd best portrait, crayon or charcoal	1 00
Elizabeth Heil, Groveport, O	Best landscape	2 00
Maud Myers, Columbus, O	2nd best landscape	1 00
Lura E. Patterson, Athens, O	Best still life	2 00
H. W. Barnitz, Columbus, O	2nd best still life	1 00
George W. Bellows, Columbus, O	Best pen and ink drawing, full length	2 00
A. B. Slower, Trenton, N. J	2nd best pen and ink drawing, full length	1 00
George W. Bellows, Columbus, O	Best pen and ink drawing, still life	2 00
H. W. Barnitz, Columbus, O	2nd best pen and ink drawing, still life	1 00
H. W. Barnitz, Columbus, O	Best pencil drawing, still life	2 00
George W. Bellows, Columbus, O	Best pencil drawing, from figure	2 00
W. J. Norris, Columbus, O	2nd best pencil drawing, from figure	1 00

OPEN TO AMATEURS ONLY.

Owner's Name and Postoffice.	Name of Article.	Amount.
	Oil Paintings.	
Grace Young, Columbus, O	Best portrait	$5 00
Mrs. M. A. Biddle, Columbus, O	2nd best portrait	3 00
Grace Young, Columbus, O	Best full length figure	3 00
Josie B. Ealy, Newark, O	2nd best full length figure	2 00
Josie B. Ealy, Newark, O	Best animal study	3 00
Mrs. Lilia M. Huber, Degraff, O	2nd best animal study	2 00
Miss L. V. Johnson, Dayton, O	Best landscape	3 00
Josie B. Ealy, Newark, O	2nd best landscape	2 00
Grace Young, Columbus, O	Best fruit piece	3 00
Miss M. Johnson, Dayton, O	2nd best fruit piece	2 00
Edna Riebel, Columbus, O	Best flower piece	3 00
Alice M. Hippel, Delaware, O	2nd best flower piece	2 00
Mrs. M. A. Biddle, Columbus, O	Best still life study	3 00
Nellie R. McClimans, Mt. Sterling, O	2nd best still life study	2 00
Mrs. M. A. Biddle, Columbus, O	Best exhibition oil paintings	10 00
Josie B. Ealy, Newark, O	2nd best exhibition oil paintings	5 00

PAINTINGS, DRAWINGS, ETC.—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
	Water Color Paintings.	
Mrs. J. N. Chamberlin, Beloit, Wis	Best portrait	$4 00
L. A. Koch, Columbus, O	2nd best portrait	2 00
L. A. Koch, Columbus, O	Best Ohio landscape	3 00
Miss M. Johnson, Dayton, O	2nd best Ohio landscape	1 00
Carrie F. Mosteller, Newark, O	Best landscape, summer study	3 00
Mrs. Lilia M. Huber, Degraff, O	2nd best landscape, summer study	1 00
Mrs. J. N. Chamberlin, Beloit, Wis	Best full length figure	3 00
Rosalee Ogden, Gahanna, O	2nd best full length figure	1 00
Carrie F. Mosteller, Newark, O	Best flower piece	3 00
Grace Young, Columbus, O	2nd best flower piece	1 00
Mrs. J. N. Chamberlin, Beloit, Wis	Best fruit piece	3 00
Dorothy Miller, Marysville, O	2nd best fruit piece	1 00
Miss Edith Huntington, Columbus, O	Best marine study	3 00
L. A. Koch, Columbus, O	2nd best marine study	1 00
Carrie F. Mosteller, Newark, O	Best still life study	3 00
Mrs. C. S. Coler, Columbus, O	2nd best still life study	1 00
Grace Young, Columbus, O	Best exhibition of water colors	3 00
Miss Edith Huntington, Columbus, O	2nd best exhibition of water colors	1 00
	Pastels.	
Carrie F. Mosteller, Newark, O	Best landscape	3 00
Mrs. Lilia M. Huber, Degraff, O	2nd best landscape	1 00
Mrs. J. A. Hopkins, Dayton, O	Best animal	2 00
Carrie F. Mosteller, Newark, O	2nd best animal	1 00
Mrs. J. A. Hopkins, Dayton, O	Best game	2 00
Carrie F. Mosteller, Newark, O	Best fruit	2 00
Mrs. J. A. Hopkins, Dayton, O	2nd best fruit	1 00
Roy Kohler, Columbus, O	Best still life	2 00
Carrie F. Mosteller, Newark, O	2nd best still life	1 00
Carrie F. Mosteller, Newark, O	Best autumn landscape	2 00
	Drawings.	
Grace Young, Columbus, O	Best portrait, crayon o charcoal	2 00
Miss Anna Scott, Columbus, O	2nd best portrait, crayon or charcoal	1 00
Mrs. J. A. Hopkins, Dayton, O	Best landscape, crayon or charcoal	2 00
Miss Anna Scott, Columbus, O	2nd best landscape, crayon or charcoal	1 00
Miss Anna Scott, Columbus, O	Best still life, crayon or charcoal	2 00
Mrs. J. N. Chamberlin, Beloit, Wis	2nd best still life, crayon or charcoal	1 00
Grace Young, Columbus, O	Best drawing from cast, crayon or charcoal.	2 00
L. A. Koch, Columbus, O	2nd best	1 00
L A. Koch, Columbus, O	Best pen and ink, full length figure	2 00
Miss Anna Scott, Columbus, O	2nd best pen and ink, full length figure	1 00
Miss Anna Scott, Columbus, O	Best pen and ink, still life	2 00
L. A. Koch, Columbus, O	Best pen and ink landscape	2 00
Mrs. J. A. Hopkins, Dayton, O	2nd best pen and ink landscape	1 00
Hester C. Harris, Springfield, O	Best pencil drawing, still life	2 00
L. A. Koch, Columbus, O	2nd best pencil drawing, still life	1 00
A. B. Sloer, Trenton, N. J	Best pencil drawing, flower piece	2 00
Hester C. Harris, Springfield, O	2nd best pencil drawing, flower piece	1 00
Arthur Keifer, Columbus, O	Best pencil drawing from figure	2 00
Mrs. J. N. Chamberlin, Beloit, Wis	2nd best pencil drawing, from figure	1 00
Miss Anna Scott, Columbus, O	Best pencil drawing, from cast	2 00
Mrs. J. N. Chamberlin, Beloit, Wis	2nd best pencil drawing, from cast	1 00
Hester C. Harris, Springfield, O	Best display of drawings, in pencil, charcoal, crayon or brush	4 00
L. A. Koch, Columbus, O	2nd best	2 00
	Wood Carving.	
Mrs. Mary Holton, Columbus, O	Best display	8 00
Hester C. Harris, Springfield, O	2nd best display	3 00
	Photography.	
James E. Taggart, Delaware ,O	Best landscape, 2 prints 5x7	2 00
G. C. Hippel, Delaware, O	2nd best landscape, 2 prints 5x7	1 00
G. C. Hippel, Delaware, O	Best animal, 2 prints 5x7	2 00
Joe A. O'Ryan, Columbus, O	2nd best animal, 2 prints 5x7	1 00
James E. Taggart, Delaware, O	Best composition, 2 prints 5x7	2 00
G. C. Hippel, Delaware, O	2nd best composition, 2 prints 5x7	1 00
G. C. Hippel, Delaware, O	Best landscape, 2 prints 4x5	2 00
Joe A. O'Ryan, Columbus, O	2nd best landscape, 2 prints 4x5	1 00
Geo. A. Smith, St. Louis, Mo	Best animal, 2 prints 4x5	2 00

PAINTINGS, DRAWINGS, ETC.—Concluded.

Owner's Name and Postoffice.	Name of Article.	Amount.
	Photography.	
Elizabeth Leigh, Groveport, O	2nd best animal, 2 prints 4x5	$1 00
Mrs. T. S. Murtha, Columbus, O	Best composition, 2 prints 4x5	2 00
James E. Taggart, Delaware, O	2nd best composition, 2 prints 4x5	1 00
G. Hammerstein, Columbus, O	Best 6 prints, 3½x3½	2 00
James E. Taggart, Delaware, O	2nd best 6 prints, 3½x3½	1 00
James E. Taggart, Delaware, O	Best portrait, any size	2 00
Geo. A. Smith, St. Louis, Mo	2nd best portrait, any size	1 00
G. C. Hippel, Delaware, O	Best harvest scene, any size	2 00
Geo. A. Smith, St. Louis, Mo	2nd best harvest scene, any size	1 00
G. C. Hippel, Delaware, O	Best display of 5 prints, 4x5	4 00
James E. Taggart, Delaware, O	2nd best display of 5 prints, 4x5	2 00

EXHIBITS IN NON-PREMIUM DEPARTMENTS.

AGRICULTURAL IMPLEMENTS AND MACHINERY.

R. O. Hinsdale, Member in Charge.

Adams & Co., Indianapolis, Ind	Road machinery.
Adrian Wire Fence Co., Adrian, Mich	Farm fences.
Akron Cultivator Co., Akron, O	Cultivators.
American Harrow Co., Detroit, Mich	Manure spreaders.
American Seeding Machine Co., Springfield, O	Seed drills.
American Steel Wire Co., Chicago, Ill	Lawn and poultry fencing and gate
Ann Arbor Machine Co., Ann Arbor, Mich	Hay press.
Anthony Fence Co., Tecumseh, Mich	Wire fences.
Appleton Mfg. Co., Batavia, Ill	Corn husker, gasoline engine, feed mill and corn sheller.
Baker, A. D., Swanton, O	Traction engines.
Bateman Mfg. Co., Glenlock, N. J	Potato planter, hand and garden cultivators.
Battles, Frank H., Rochester, N. Y	Cattle stanchers.
Beach Mfg. Co., Charlotte, Mich	Road culvert.
Bauroth Bros., Springfield, O	Gasoline engines and pumps.
Bennett & Co., Westerville, O	Stump puller, tile ditcher, handy wagon and corn harvesters.
Boley Wire Fence Co., Sandusky, O	Farm wire fences.
Boulton, O. T., Covington, O	Stock rack and scales.
Boyd, D. C., Orrville, O	Stone crushers, road grader, elevator, etc.
Brown Mfg. Co., Zanesville, O	Farm wagons, cultivators, shovel plows, etc.
Brown Manley Plow Co., Malta, O	Plows, cultivators, etc.
Brown, Cockran & Co., Lorain, O	Gasoline engines.
Budd, M. L., Westerville, O	Ventilators.
Budd, O. W., Westerville, O	Weed turner.
Carter Wire Fence Machine Co., Mt. Sterling, O	Fence machine and steel wire fence.
Castle, S. P., & Co., Urbana, O	Cider and syrup evaporator.
Cement Machine Co., Jackson, Mich	Cement block machine.
Champion Evaporator Co., Hudson, O	Evaporator in operation..
Champion Potato Machinery Co., Hammond, Ind	Potato planter and potato digger.
Champion Wagon Co., Owego, N. Y	Farm wagons.
Chicago Gas Engine Co., Chicago, Ill	Gas engines.
Chicago Wire Fence and Tool Co., Chicago, Ill	Fence building tools.
Cleveland Steel Post and Fence Co., Cleveland, Ohio	Steel posts and farm fence.
Clipper Plow Co., Defiance, O	Cultivators, corn cutters, plows, harrows, etc.
Columbus Machine Co., Columbus, O	Gasoline engines.
Columbus Cement Stone Co., Columbus, O	Cement building blocks.
Columbus Plow Co., Columbus, O	Plows.
Columbus Rock Plaster Co., Columbus, O	Rock wall plaster.
Collins Plow Co., Quincy, Ill	Hay presses and baler.
Colvin, Chase, South Charleston, O	Steel anchor posts.
Cook Motor Co., Delaware, O	Gasoline engines.
Cope Schaible Mfg. Co., Elryia, O	Garden cultivators.
Coquillard Wagon Co., Henderson, Ky	Log, stone and farm wagons.
Cyclone Woven Wire Fence Co., Holly, Mich	Steel farm fence and fancy gates.
David Bradley Co., Bradley, Ill	Plows, cultivators, planters, etc.
Deere Plow Co., Indianapolis, Ind	Cultivators, harrows, plows, fodder cutters, hay rakes, etc.
Desmond-Stephan Mfg. Co., Urbana, O	Injector and emery wheel dresser.
Dowagiac Mfg. Co., Dowagiac, Mich	Drills.

Dunham & Son, Berea, O.	Land rollers and pulverizers.
Duvall, V. R., Ashville, O.	Farm gates.
Eastern Moline Plow Co., Indianapolis, Ind.	Corn planters, wheat drills, harrows, etc.
Eckle, W. N., Madison Mills, O.	Crane for stacking hay.
Empire Drill Co., Shortsville, N. Y.	Drills.
Evans, A. C., Springfield, O.	Planters and harrows.
Fairbanks, Morse & Co., Cincinnati, O.	Gasoline engine and pumping attachment.
Farmers Co-operative Harvesting Mach. Co., Springfield, O.	Binders, mowers, etc.
Frost Wire Fence Co., Cleveland, O.	Wire fence and gates.
Flint and Walling Mfg. Co., Columbus, O.	Wind mills, tanks, heaters, shellers,etc.
Foos Mfg. Co., Springfield, O.	Grinding mills, corn cutters, etc.
Foos Gas Engine Co., Springfield, O.	Gasoline engines.
Ft. Wayne Wind Mill Co., Ft. Wayne, Ind.	Wind mills and towers.
Gale Mfg. Co., Albion, Mich.	Plows, corn planters, harrows and cultivators.
Geneva Metal Wheel Co., Geneva, O.	Steel wagon, trucks and wheels.
German Kali Works, N. Y.	Fertilizer.
Good Roads Machinery Co., Pittsburg, Pa.	Road machinery.
Grand Rapids Plaster Co., Grand Rapids, Mich.	Sockets, plaster and plaster boards.
Hamm Co., The, Washington C. H., O.	Fertilizer.
Hansberger, H., Millersport, O.	Fence posts and machine.
Harrison & Co., Massillon, O.	Gasoline engines, feed cutter with blower, corn sheller.
Harris & Reese, Galion, O.	Convertible wagon rack.
Hayden Automatic Block Machine Co., Columbus, O.	Block machines and mixers.
Hayes Pump & Planter Co.,Galva, Ill.	Cultivators, harrows, pumps, etc.
Heller, Aller & Co., Napoleon, O.	Wind mills, steel tanks, pumps, etc.
Hickox, Mull, Hill & Co., Toledo, O.	Manure spreaders, wagons, rollers, corn cutters, etc.
Hoosier Drill Co., Richmond, Ind.	Wheat drills and corn planters.
Hoover Prout Co., Avery, O.	Potato digger.
Hunt, Helm, Ferris & Co., Harvard, Ill.	Hay forks, carriers, wood and steel tracks , tank heaters, etc.
Hurst Co., Chas. B., Chillicothe, O.	Scales and water tank.
Hutchinson, R., Pavilion, N. Y.	Farm fences.
Hydraulic Press Mfg. Co., Mt. Gilead, O.	Cider presses.
Indiana Silo Co., Anderson, Ind.	Silo.
Indiana Road Machine Co., Ft. Wayne, Ind.	Road machinery.
International Harvester Co., Columbus, O.	Corn huskers and gasoline engines.
International Fence and Fire Proofing Co., Columbus, O.	Farm and field fences.
Ironton Disc Plow Co., Ironton, O.	Plows with disc attachment.
Jackson Wagon Co., Jackson, Mich.	Farm wagons.
Kansas City Hay Press and Machine Co., Columbus, O.	Gasoline engines, hay presses, scales etc.
Kelly Springfield Road Roller Co., Springfield, O.	Steam road rollers.
Kemp & Burpee Mfg. Co., Syracuse, N. Y.	Manure spreaders.
Kemp Mfg. Co., Toledo, O.	Manure spreaders.
Kenney, E. T., Co., Indianapolis, Ind.	Corn huskers.
Keystone Co., The, Columbus, O.	Corn huskers, binders, potato planters, etc.
Keystone Farm Machine Co., New Waterford, O.	Cider press, corn shellers, feed cutters, etc.
Lamb Wire Fence Co., Adrian, Mich.	Farm and fancy wire fence.
Lehr Agricultural Co., Fremont, O.	Cultivators, rollers, crushers, and harrows.
Loomis Machine Co., Tiffin, O.	Grain drills.
Long, Allstalter Co., Hamilton, O.	Cultivators, rollers, crushers, harrows, etc.
Long, W. Z., Springfield, O.	Confectionery machine.

London Machine Co., Fairfield, Iowa	Track carriers, etc.
Lyons Washing Machine Co., Lyons, Mich.	Washing machines.
Manson-Campbell Co., Detroit, Mich	Fanning mills.
Mason Fence Co., Leesburg, O.	Coiled spring fence.
Mast Foos & Co., Springfield, O.	Wind mills, hand pumps, power pumps, etc.
Mast, H. G., Benton, O.	Wind mill models.
Mast & Co., Springfield, O.	Drills, cultivators, etc.
Majestic Wire Fence Co.,	Steel wire farm fence.
Milburn Wagon Co., Toledo, O	Wagons and patent wheels.
Miller & Hoy, Wauseon, O.	House tanks.
Mobile Garden Implement Mfg. Co., Mt. Gilead, Ohio	Garden cultivators.
Mossman, James, Westerville, O.	Wire stretcher.
McSherry Mfg. Co., Middletown, O.	Drills, planters, etc.
National Hot Air Furnace Co., Dayton, O.	Hot air furnaces.
Nelson, Morris & Co., Chicago, Ill.	Fertilizer.
New Era Gas Engine Co., Dayton, O.	Gasoline engines, etc.
Ohio Agricultural Mfg. Co., Columbus, O.	Grain separators.
Ohio Cultivator Co., Bellevue, O.	Steam hay presses.
Ohio Mfg. Co., Upper Sandusky, O.	Harrows, rollers and feed mills.
Ohio Motor Co., Sandusky, O.	Stationary and portable engines.
Ohio Rake Co., Dayton, O.	Rakes, planters, cultivators, etc.
Olds Gasoline Engine Works, Lansing, Mich.	Gasoline engines with pumping attachment.
Olds Wagon Works, Ft. Wayne, Ind.	Farm wagons.
Orendorff, Parlin, Canton, Ill.	Plows, cultivators, harrows, etc.
Page Woven Wire Fence Co., Adrian, Mich.	Farm, poultry and lawn fence.
Port Huron Engine and Thresher Co., Port Huron, Mich.	Steam Engines.
Prescott, Edwin, Boston, Mass.	Swinging swivel stanchion.
Probasco, A. B., Lebanon, O.	Wire splices.
Rarey, A. K., Kenton, O.	Swath cleaner.
Red King Wind Mill Co., Wauseon, O.	Wind mills and hand pumps.
Reeves Bros., Columbus, O.	Gasoline engines.
Renner & Elder, Columbus, O.	Gasoline engines, hand pumps and wind mills.
Revolving Cement Co., Columbus, O.	Building block machinery..
Rosenthal Corn Husker & Hay Press Co., Millwaukee, Wis.	Corn huskers.
Ross, E. W., Co., Springfield, O.	Ensilage cutter with blower.
Ross Supply Co., Greenville, O.	Gasoline engines, steel tanks, wind mills, etc.
Ruhlman & Miller, Cardington, O.	Washing machines.
Russell Wind Stacker Co., Indianapolis, Ind.	Wind stackers.
Safety Shredder Co., New Castle, Ind.	Corn shredders.
Sapp Bros., Columbus, O.	Corn shocker.
Schudler Machine Works, Newark, O.	Traction engines.
Seckler Carriage Co., Moline, Ill.	Corn planters with fertilizer attachment.
Seibling & Miller, Doylestown, O.	Binders and mowers.
Severance Tank Works, Lansing, Mich.	Silos.
Shimer & Co., Anderson, Ind.	Farm and lawn fence, steel posts and steel gates.
Shunk Plow Co., Bucyrus, O.	Plows, steel wheel wagons.
Silver, S. C., London, O.	Anchor posts.
Shoenlaub & Miller, Marion, O.	Kraut cutter.
Smith Agricultural Chemical Co., Columbus, O.	Fertilizer.
Smith, T. H., & Co., Pekin, Ill.	Wagons.
Smith Manure Spreader Co., Chicago, Ill.	Manure spreaders.
Stacey, Boggs, Corn Cutter Co., Chillicothe, O.	Corn cutters.
Standard Harrow Co., Utica, N. Y.	Cultivators, harrows, manure spreaders, etc.
Standish Machine & Supply Co., Columbus, O.	Wood pulleys.
Star Mfg. Co., New Lexington, O.	Feed mills.
Stoddard Mfg. Co., Dayton, O.	Disc harrows, corn planters and grain drills.

Stoner Cement Fence Post Co.	Cement anchor posts.
Stowell Mfg. and Foundry Co., S. Millwaukee, Wis.	Door hangers, floor registers, etc.
Syracuse Plow Co., Syracuse, N. Y.	Plows, harrows, cultivators and scrapers.
Superior Mfg. Co., Bowling Green, O.	Cultivator with weeder attachment.
Superior Drill Co., Springfield, O.	Grain drills, harrows and cider mill.
Tiffin Wagon Works, Tiffin, O.	Farm wagons and dump carts.
Thomas Mfg. Co., Springfield, O.	Grain drills, hay tedder, etc.
Trolley Box Co., Springfield, O.	Box trolley.
Troy Wagon Co., Troy, O.	Wagons.
Underwood Building Block Machine Co., Fostoria, O.	Building block machine.
Van Buren, Heck & Marvin Co., Findlay, O.	Traction ditcher.
Wayne Works, Richmond, Ind.	Drills, planters, wagons, etc.
Wilder-Strong Implement., Co., Monroe, Mich.	Silo filler, ensilage cutter, etc.
Weber Wagon Co., Chicago, Ill.	Farm wagons.
Weinman Machine Works, Columbus, O.	Pumping machines.
Welbourn Co., Mt. Gilead, O.	Bag holder.
Whitman Agricultural Co., St. Louis, Mo.	Hay press.
Wilson, F. M., Selma, O.	Pneumatic ensilage and fodder cutter.
Wingett Concrete Machine Co., Columbus, O.	Building block machine.
Worst Mfg. Co., New London, O.	Swings.
Zettler Hardware Co., Columbus, O.	Washing machines.

MERCHANTS' AND MANUFACTURERS' PRODUCTS.

T. E. Cromley, Member in Charge.

American Art Tile Co., Columbus, O.	Art tile building stone, etc.
Anderson Carriage Co., Detroit, Mich.	Buggies, surries, phaetons, etc.
Apron & Hood Co., Columbus, O.	Storm hoods, aprons and covers.
Black, C. E., Furnace Co., Mt. Vernon, O.	The Comfort warm blast furnace.
Blackwood, Green & Co., Columbus, O.	Stoves, ranges and kitchen furnishings for coal and gas.
Buckeye Buggy Co., Columbus, O.	Depot carriages, surries, traps, buggies, phaetons, etc.
Buckeye Saw Co., Columbus, O.	Saws and saw mill supplies.
Calkins & Son, Columbus, O.	Furnaces and stoves for coal or gas.
Cleveland Steel Range Co., Cleveland, O.	Steel ranges for coal or natural gas.
Colonial Carriage Co., Circleville, O.	Buggies, surries, phaetons, etc.
Columbus Buggy Co., Columbus, O.	Carriages, surries, depot wagons, runabouts, phaetons.
Columbus Carriage & Harness Co., Columbus, O.	Carriages, phaetons, surries, buggies & harness.
Columbus Hygiene Mfg. Co., Columbus, O.	Natural gas stoves and heaters, etc.
Columbus Stove Works, Columbus, O.	Stoves and ranges for coal or gas.
Cussins & Fearn, Columbus, O.	Stoves, kitchen furnishings, household and farm furnishings.
Donovin & Hunt, Columbus, O.	Army ranges and natural gas stoves.
Dougherty & Cott Co., Columbus, O.	Storm hoods, aprons, covers, etc.
Enterprise Carriage Co., Miamisburg, O.	Buggies, surries, phaetons, etc.
Excelsior Seat Co., Columbus, O.	Carriage, phaeton and buggy bodies.
Gaumer, E., & Sons, Urbana, O.	Pony phaetons, traps and road carts.
Herring Buggy Co., Mansfield, O.	Phaetons, surries, buggies, etc.
Hertenstein, Wm., Columbus, O.	Stoves of all kinds.
Heskett, W. E., Columbus, O.	Stoves and household furnishings..
Home Furnishing Co., Columbus, O.	Stoves, kitchen furnishings and household goods.
Hylcier, W. H., Freeport, O.	Furnaces.
Jewell Stove Works, Detroit, Mich.	Stoves, ranges for coal or gas.
Kiblinger Co., Auburn, Ind.	Delivery and express wagons.
Knoderer, L. F., Columbus, O.	Natural Gas Co.
Lear, Oscar & Co., Columbus, O.	Automobiles.

Lincoln Carriage Co., Greensburg, Ind	Carriages, surries, phaetons, buggies and light spring wagons.
Mason Monumental Works, Columbus, O	Monuments, markers, slabs, etc.
McAuley, J. A., Tent & Awning Co., Col, O	Awnings, tents, horse covers, etc.
Ohio Buggy Co., Galion, O	Surries, phaetons, buggies, etc.
Ohio Vehicle & Harness Co., Columbus, O	Harness of all kinds.
Ohlen, Jas., Saw Co., Columbus, O	Saws of all kinds and saw mill supplies.
Parsons & Houghton Co., Marion, O	Fancy traps, buggies, surries, etc.
Patterson, W. A., & Co., Flint, Mich	Surries, buggies, phaetons, runabouts.
Peerless Steel Range Co., Columbus, O	Natural gas ranges, cooking and heating stoves.
Peters Buggy Co., Columbus, O	Buggies, surries, phaetons.
Post Buggy Co., Columbus, O	Buggies, phaetons, runabouts, surries.
Richland Buggy Co., Mansfield, O	Surries, buggies, phaetons, runabouts and cutters.
Roderick, Snyder & Son, Columbus, O	Natural gas heaters and ranges and natural gas fixtures.
Scioto Buggy Co,, Columbus, O	Carriages, buggies, phaetons, etc.
Seeley & Beery, Columbus, O	Stoves, washing machines and kitchen outfit.
Sells, J. H. & F. A., Columbus, O	Harness, saddles, whips, robes and mountings.
Tenant, S., Columbus, O	Patent stove for gasoline.
Warren Paint Co., Columbus, O	Paints, oils and varnishes.
Westcott Mfg. & Vehicle Co., Richmond, Ind	Buggies, surries, phaetons, and carriaages.
Yardley, A. L., & Co., Columbus, O	Window and door screens.
Zimmerman Mfg. Co., Auburn, Ind	Surries, buggies, phaetons and traps.

MERCHANDISE, MUSIC, ETC.

T. E. Cromley, Member in Charge.

American Refinery Co., Columbus, O	Merchandise.
Arnold, W. H., Charleston, W. Va	Merchandise.
Baird & Co., Columbus, O	Shoes.
Beach, J. M., Elmira, N. Y	Merchandise.
Bell–Dana Co., Columbus, O	Pictures and frames.
Bradt, N. P., Jamestown, N. Y	Merchandise.
Carsonville Robe Tanning Co., Carsonville, Mich	Display of robes.
Children's Home Society, Columbus, O	Literature.
Citizen's Telephone Co., Columbus, O	Telephone exchange.
Columbus Business College, Columbus, O	Drawings, pen work, etc.
Crouse, C. L., Akron, O	Aluminum goods.
Cussins, W. C., Co., Columbus, O	Furs and wraps,
Davis, Anna, New Carlisle, O	Merchandise.
Dickson, James, Cincinnati, O	Fountain pens.
Egg Baking Powder Co., N. Y	Baking powder.
Eureka Carpet Co., Columbus, O	Rugs and rag carpets.
Heskett, W. E., Columbus, O	Furniture, carpets and rugs.
Jule, R. G., Columbus., O	Card printing press.
Kelley, A. C., Chicago, Ill	Optical goods.
Kern, B., Columbus, O	Merchandise.
Kneipp Malt Coffee, Manitowoc, Wis	Coffee display.
Krauss, Butler & Benham, Columbus, O	Carpets, rugs and curtains.
Lutz & Schraunn, Pittsburg, Pa	Display of canned goods.
McAllister, Mohler & Co., Columbus, O	Furniture.
Miller's Fair, Columbus, O	Baby carriages and toys.
Q'Daniel, J. H., Columbus, O	Aluminum goods.
Puntenny, Eutsler & Co., Columbus, O	Pianos and sheet music.
Reynolds, C. T., Columbus, O	Optical goods.
Schoedinger, Fearn & Co., Columbus, O	Bread mixers.
Stewart Bros., Columbus, O	Furniture, carpets and rugs.
Toledo Computing Scale Co., Toledo, O	Computing scales.
Westlake, M. W., Columbus, O	Glassware.
Whitsit, Perry B., Columbus, O	Phonographs and electric pianos.

BOARD
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CHIEF INSPECTOR.

STATE OF OHIO
DEPARTMENT OF AGRICULTURE
Division of Commercial Fertilizers

COLUMBUS, OHIO, December 31, 1904.

To the Manufacturers of, Dealers in and Consumers of Commercial Fertilizers:

Agreeable to the requirement of the fertilizer law of Ohio, I herewith present "a correct report of all analyses" of commercial fertilizers made by the State Chemist, "and certificates filed" by the manufacturers or general agents, guaranteeing ingredients, for the year 1904.

The following tables of analyses and valuations of commercial fertilizers include all brands that have been properly licensed to sell in the state that have been found on the markets by my Deputy Inspectors of Fertilizers. An additional table will be found giving a list of brands which have been properly licensed, but not found on the markets. If other brands have been sold in this state they have not been found by my Deputies.

All licenses expire December 31, 1904, and no commercial fertilizers can be legally sold or offered for sale in the state after this date until fees are paid and licenses secured by the maufacturers or agents for the year ending December 31, 1905, so the agent who proposes handling, selling, or dealing in commercial fertilizers in 1905, will do well to see that the manufacturer has paid license on each and every brand he offers for sale, for if the manufacturer fails to do this, the "importer or party who causes it to be sold or offered for sale within the State of Ohio," will be held for the same or subjected to the payment of the fines and penalties prescribed in Sections 4446*f* and 7002 of the Revised Statutes. To avoid all possibility of trouble, the agent handling commercial fertilizers should see that the manufacturer has complied with the law before goods are offered for sale. Whether or not this has been done can be learned from the manufacturer, or from the Secretary of the State Board of Agriculture, Columbus, Ohio.

It is to the advantage of all dealers in and purchasers of commercial fertilizers that the fertilizer law should be enforced, and if they know of any brands offered for sale in 1904, not appearing in the following lists, they will aid the enforcement of the law and confer a favor by notifying the Secretary. In a few cases goods are shipped into the state by parties who are ignorant of the law, and who will promptly comply with its requirements as soon as they receive the necessary information.

With the co-operation of all farmers using commercial fertilizers, and of all just manufacturers and dealers, I feel certain that evasions of the law will be few and will soon cease altogether. The penalties prescribed by law and the injury to the reputation of the manufacturer who seeks to evade it are so great that he can not afford to neglect or refuse to comply with its reasonable requirements.

Manufacturers intending to place their goods on sale in Ohio should send to the Secretary for blanks on which to make formal application for license.

Manufacturers, when applying for licenses, will facilitate the work of sampling their goods by sending to the Secretary lists of their agents and stating where goods may be found.

SAMPLES SENT BY MANUFACTURERS.

To comply with the law, manufacturers should always send samples of commercial fertilizers to the Secretary of the State Board of Agriculture, when making applications for licenses, that they may be used in comparison with those drawn on the markets for analysis.

ADVANCE REPORTS.

It is my custom to send advance reports to manufacturers, to give them an opportunity to check the Chemist's work, before the results are published in the annual report, in order to insure accuracy. The analyses reported will be published unless some errors are shown. It is not sufficient to claim they are wrong because they show lower percentages than the maufacturers claim; this is not proof or evidence of error. The object of sending these advance reports is to enable me to eliminate errors should they exist. Where there are doubts about the findings I will have samples re-tested and will, if requested, cause parts of the samples in question to be sent to any member of the Association of Official

Agricultural Chemists, of which Prof. Harvey W. Wiley, of Washington, D. C., is Secretary; but the manufacturers making such requests must pay the official chemists they select for making analyses.

REGULAR ANALYSES.

The work of sampling and analyzing fertilizers is done in accordance with the fertilizer law of the state, and under this law the Official Chemist analyzes such samples as are furnished him by the Secretary of the State Board of Agriculture.

Samples are drawn from the open markets of the state and from stocks purchased by consumers of commercial fertilizers by my duly authorized Deputy Inspectors, F. A. Derthick, Ed. Loewer, R. H. Ramsdell, B. M. Derthick and M. R. Merritt. Great care is taken in this work, and samples are drawn from every brand that can be found in the state by diligent search and inquiry, covering a period from the latter part of March until the early part of December. It is regretted that samples of all licensed goods could not be found, but until manufacturers and dealers give more care to the matter of informing me where goods can be found, perfect results can not be obtained. With the information possessed by the Secretary and his Deputy Inspectors, the field has been worked diligently and faithfully.

SPECIAL ANALYSES.

I frequently have requests from farmers and agents to make special analyses of samples of commercial fertilizers. I am obliged to say that the law does not provide for these, and I have no fund for paying for the work involved. If it will be an accommodation, I will have special analyses made by the Official Chemist of such samples as may be sent me with the proper fees, as follows: "Phosphates" and "Superphosphates": Ammonia, three dollars ($3); phosphoric acid (two determinations), six dollars ($6); potash, three dollars ($3); or a total of twelve dollars ($12) if all three ingredients are claimed. "Bones" and "Tankages": Ammonia, three dollars ($3); total phosphoric acid, three dollars ($3); potash, three dollars ($3); or a total of nine dollars ($9) if all three ingredients are claimed; or, in other words, three dollars ($3) for each and every determination.

In selecting a sample for analysis great care should be taken to secure a fair average of the goods from which the sample is drawn. A small quantity should be taken from five to eight different parts—top, bottom, center, sides, etc.—of each of several packages of fertilizers, and all these small parcels should be carefully and thoroughly mixed together; then from this take from one-half pint to a pint and put into an air-tight package—glass or tin—and send by express or mail, charges prepaid.

VALUATIONS OF COMMERCIAL FERTILIZERS.

Great care has been given to the subject of valuations, and the figures given in the following tables are the results of a careful and painstaking study of the market quotations of fertilizer ingredients and the cost of mixing and placing on the markets of the state well-prepared commercial fertilizers.

Of course, it is impossible in any system of commercial valuations to fix absolutely exact prices at which goods are or can be sold, uniformly and under all circumstances and conditions. The two objects sought, however, are, first, to give a uniform scale for commercial comparison; and second, to give, as nearly as possible, a reasonably correct average price at which the farmer should have been able to buy good fertilizers in 1904.

It is always necessary to bear in mind that the values given to these fertilizers are intended to express their *commercial values;* that is, the cost at which the materials should be put together and sold at a fair profit; and are not necessarily indicative in any way of their *agricultural values,* which, of course, depend on the nature of the soils on which they are used and the needs of the crops grown.

VALUES FOR 1904.

Table No. 1.—Mixed Fertilizers, with Potash.

Ammonia, 13¼ cents per pound, or $2.65 per unit.

Available phosphoric acid, 5 cents per pound, or $1.00 per unit.

Insoluble phosphoric acid, in *bone,* 2½ cents per pound, or 50 cents per unit.

Insoluble phosphoric acid, in mixed animal and mineral, 1 cent per pound, or 20 cents per unit.

Potash (actual) from sulphate, 5¾ cents per pound, or $1.15 per unit.

Potash (actual) from muriate, 5 cents per pound, or $1.00 per unit.

Table No. 2.—Mixed Fertilizers, without Potash.

Ammonia, 13¼ cents per pound, or $2.65 per unit.

Available phosphoric acid, 5 cents per pound, or $1.00 per unit.

Insoluble phosphoric acid, in *bone,* 2½ cents per pound, or 50 cents per unit.

Insoluble phosphoric acid, in mixed animal and mineral, 1 cent per pound, or 20 cents per unit.

TABLE No. 3.—DISSOLVED BONE.

Ammonia, 13¼ cents per pound, or $2.65 per unit.
Available phosphoric acid, 5 cents per pound, or $1.00 per unit.
Insoluble phosphoric acid, 2½ cents per pound, or 50 cents per unit.

TABLE No. 4.—ROCK PHOSPHATE.

Available phosphoric acid, 5 cents per pound, or $1.00 per unit.

TABLE No. 5.—ROCK PHOSPHATE AND POTASH.

Available phosphoric acid, 5 cents per pound, or $1.00 per unit.

Potash (actual) from sulphate, 5¾ cents per pound, or $1.15 per unit.

Potash (actual) from muriate, 5 cents per pound, or $1.00 per unit.

TABLE No. 6.—TANKAGE.

Ammonia 9½ cents per pound, or $1.90 per unit.
Total phosphoric acid, 3 cents per pound, or 60 cents per unit.

TABLE No. 7.—TANKAGE AND POTASH.

Ammonia 9½ cents per pound, or $1.90 per unit.
Total phosphoric acid, 3 cents per pound, or 60 cents per unit.
Potash (actual) from sulphate, 5¾ cents per pound, or $1.15 per unit.
Potash (actual) from muriate, 5 cents per pound, or $1.00 per unit.

TABLE No. 8.—BONES.

Ammonia, 13¼ cents per pound, or $2.65 per unit.

Phosphoric acid in "fine" bone, 3¾ cents per pound, or 75 cents per unit.

Phosphoric acid in "medium" bone, 3 cents per pound, or 60 cents per unit.

Potash, if found present, valued same as in TABLE No. 1.

TABLE No. 9.—POTASH SALTS.

Potash (actual) from sulphate, 5¾ cents per pound, or $1.15 per unit.

Potash (actual) from muriate, 5 cents per pound, or $1.00 per unit.

TABLE No. 10.—NITRATE OF SODA.

Ammonia, 13¼ cents per pound, or $2.65 per unit.

TABLE No. 11.—PRECIPITATED PHOSPHATE.

Available phosphoric acid, 5 cents per pound, or $1.00 per unit.

On the last pages of this report will be found the fertilizer law of the state, in force at this time.

W. W. MILLER, *Secretary.*

NOTE.—"Unit" is a trade expression used in speaking of the ingredients of commercial fertilizers, and means one percentum of a ton, or twenty pounds; *e. g.*, ammonia 13¼ cents per pound, or $2.65 per unit; that is, $2.65 for twenty pounds.

TABULATED ANALYSES AND VALUATIONS OF COMMERCIAL FERTILIZERS FOR THE YEAR ENDING DECEMBER 31, 1904.

All analyses are made by Prof. N. W. Lord, Ohio State University, Columbus, Ohio, Official Chemist.

TABLE I.—Mixed Fertilizers, with Potash.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found	Ammonia		Phosphoric Acid					Potash		Total Value	Record Number
					Available		Insoluble		Total Percent				
			Percent	Value	Percent	Value	Percent	Value		Percent	Value		
2	**Potato, Truck and Tobacco Fertilizer**	Claimed.	2.00	......	8.00	......	......	......	10.00	4.00	......	......	....
	The Chicago Fertilizer Co., Chicago, Ill......	Found.	2.30	6.10	9.51	9.51	2.56	.51	12.07	3.85	3.85	19.97	2
4	**Big Five Pure Bone Phosphate**	Claimed.	3.10	......	5.15	......	4.54	......	9.69	1.19	......	......	....
	Nelson Morris & Co., Chicago, Ill...........	Found.	4.00	10.60	8.83	8.83	†2.17	1.08	11.00	1.40	1.40	21.91	4
5	**Four Fold**	Claimed.	2.00	......	8.00	......	1.00	......	9.00	2.00	......	......	....
	Walker, Stratman & Co., Pittsburg, Pa.	Found.	1.40	3.71	6.71	6.71	1.66	.33	8.37	1.99	1.99	12.74	5
6	**Acidulated Bone**	Claimed.	1.00	......	10.00	......	1.00	......	11.00	1.00	......	......	....
	The M. Hamm Co., Washington C. H., O......	Found.	1.30	3.45	10.50	10.50	3.25	.65	13.75	1.23	1.23	15.83	6
9	**Potato and Tobacco Special**	Claimed.	2.00	......	8.00	......	......	......	10.00	4.00	......	......	....
	The Ohio Farmers' Fert. Co., Columbus, O.	Found.	2.05	5.43	8.51	8.51	1.72	.34	10.23	3.26	3.26	17.54	9
13	**Progress Corn and Wheat Grower**	Claimed.	2.00	......	9.00	......	1.00	......	10.00	1.00	......	......	....
	The Globe Fertilizer Co., Louisville, Ky.....	Found.	2.35	6.23	9.83	9.83	1.02	.20	10.85	*1.02	1.17	17.43	13
14	**Globe Grain Grower**	Claimed.	0.50	......	9.00	......	1.00	......	10.00	1.50	......	......	....
	The Globe Fertilizer Co., Louisville, Ky.....	Found.	0.70	1.86	9.79	9.79	0.70	.14	10.49	*1.62	1.86	13.65	14
15	**Soluble Vegetable Manure**	Claimed.	2.00	......	8.00	......	1.00	......	9.00	5.00	......	......	....
	The Globe Fertilizer Co., Louisville, Ky.....	Found.	1.95	5.17	9.26	9.26	0.64	.13	9.90	*5.20	5.98	20.54	15

17	**Celery, Onion and Potato Special**.............	Claimed.	1.50	......	8.00	......	2.00	......	10.00	10.00	......	......	....
	The Buckeye Fertilizer Co., Columbus, Ohio.	Found.	1.55	4.11	6.91	6.91	2.74	.55	9.65	9.75	9.75	21.32	17
18	**Special Blood and Potash Mixture**	Claimed.	1.00	......	8.00	......	2.00	......	10.00	4.00	......	......	....
	The Buckeye Fertilizer Co., Columbus, Ohio.	Found.	1.10	2.92	8.77	8.77	2.74	.55	11.51	3.80	3.80	16.04	18
21	**Fish Guano**	Claimed.	1.00	......	7.00	......	1.00	......	8.00	2.00	......	......	....
	The Buffalo Fertilizer Co., Buffalo, N. Y...	Found.	0.85	2.25	9.72	9.72	1.08	.22	10.80	*1.81	2.08	14.27	21
22	**Tuscarora Standard**	Claimed.	2.00	......	8.00	......	2.00	......	10.00	2.00	......	......	....
	The Tuscarora Fertilizer Co., Chicago, Ill..	Found.	2.10	5.57	8.36	8.36	1.28	.26	9.64	2.04	2.04	16.23	22
24	**Big Four**	Claimed.	2.00	......	7.00	......	2.00	......	9.00	4.00	......	......	....
	The Tuscarora Fertilizer Co., Chicago, Ill..	Found.	1.95	5.17	8.08	8.08	1.20	.24	9.28	*4.20	4.83	18.32	24
27	**Ideal Grain Grower**	Claimed.	1.00	......	7.00	......	......	......	9.00	1.00	......	......	....
	The Abbott & Martin Rend. Co., Columbus, O.	Found.	0.90	2.39	8.58	8.58	3.19	.64	11.77	1.02	1.02	12.63	27
29	**Bradley's Complete Manure for Potatoes & Veg.**	Claimed.	4.00	......	8.00	......	......	......	10.00	7.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	4.00	10.60	7.79	7.79	2.05	.41	9.84	7.73	7.73	26.53	29
30	**Bradley's Dissolved Bone and Potash**	Claimed.	1.25	......	8.00	......	......	......	10.00	2.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.15	3.05	8.75	8.75	1.40	.28	10.15	2.12	2.12	14.20	30
32	**Crocker's Universal Grain Grower**	Claimed.	1.00	......	8.00	......	......	......	10.00	2.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.25	3.31	8.94	8.94	1.21	.24	10.15	2.28	2.28	14.77	32
35	**Great Eastern's Corn Fertilizer**	Claimed.	1.00	......	8.00	......	......	......	10.00	4.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.20	3.18	9.08	9.08	2.30	.46	11.38	4.97	4.97	17.69	35
37	**Challenge Corn Grower**	Claimed.	2.50	......	8.00	......	......	......	10.00	1.50	......	......	....
	The Northwestern Fert. Co., Chicago, Ill....	Found.	2.65	7.02	8.38	8.38	2.49	.50	10.87	1.60	1.60	17.50	37
39	**Peerless Superphosphate**	Claimed.	1.75	......	8.00	......	0.50	......	8.50	1.50	......	......	....
	The Canton Fert. and Chem. Co., Canton, O.	Found.	2.50	6.63	10.74	10.74	†1.59	.79	12.33	*2.22	2.55	20.71	39
40	**Peerless Corn, Wheat and Grass Grower**........	Claimed.	1.00	......	7.00	......	1.00	......	8.00	1.00	......	......	....
	The Canton Fert. and Chem. Co., Canton, O.	Found.	2.25	5.96	9.15	9.15	†1.08	.54	10.23	*2.47	2.84	18.49	40

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† From animal matter.

* From sulphate.

TABLE I.—MIXED FERTILIZERS, WITH POTASH—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found	Ammonia		Phosphoric Acid					Potash		Total Value	Record Number
					Available		Insoluble		Total Percent				
			Percent	Value	Percent	Value	Percent	Value		Percent	Value		
41	**Onion and Truck Fertilizer**	Claimed.	2.00	......	8.00	......	2.00	......	10.00	8.00	......	......	....
	The Wuichet Fertilizer Co., Dayton, Ohio	Found.	1.30	3.45	11.84	11.84	1.21	.24	13.05	5.45	5.45	20.98	41
42	**Ruby Phosphate**	Claimed.	1.00	......	10.00	......	2.00	......	12.00	1.00	......	......	....
	The Wuichet Fertilizer Co., Dayton, Ohio	Found.	1.25	3.31	10.92	10.92	3.00	.60	13.92	0.62	.62	15.45	42
43	**Tobacco Grower**	Claimed.	2.00	......	8.00	......	2.00	......	10.00	5.00	......	......	....
	The Bowker Fert. Co., Cincinnati, Ohio	Found.	2.40	6.36	8.68	8.68	3.33	.67	12.01	*5.63	6.47	22.18	43
46	**Big Three Pure Bone Phosphate**	Claimed.	3.25	......	6.41	......	5.48	......	11.89	2.06	......	......	....
	Nelson Morris & Co., Chicago, Ill	Found.	3.95	10.47	8.44	8.44	†4.02	2.01	12.46	*2.45	2.82	23.74	46
48	**Tobacco and Potato Special**	Claimed.	2.00	......	8.00	......	......	......	10.00	4.00	......	......	....
	The Hardy Packing Co., Chicago, Ill	Found.	2.30	6.10	9.28	9.28	2.49	.50	11.77	4.07	4.07	19.95	48
49	**Big Bonanza**	Claimed.	2.00	......	9.00	......	1.00	......	10.00	4.00	......	......	....
	Walker, Stratman & Co., Pittsburg, Pa.	Found.	2.45	6.49	6.84	6.84	1.40	.28	8.24	4.16	4.16	17.77	49
54	**Grain Grower**	Claimed.	2.00	......	8.00	......	2.00	......	10.00	2.00	......	......	....
	The Armour Fertilizer Works, Chicago, Ill	Found.	2.10	5.57	9.08	9.08	2.11	.42	11.19	2.26	2.26	17.33	54
55	**Wheat, Corn and Oats Special**	Claimed.	1.00	......	7.00	......	2.00	......	9.00	1.00	......	......	....
	The Armour Fertilizer Works, Chicago, Ill	Found.	1.45	3.84	7.61	7.61	1.34	.27	8.95	1.47	1.47	13.19	55
59	**Bone, Blood and Potash**	Claimed.	5.00	......	8.00	......	2.00	......	10.00	7.00	......	......	....
	The Armour Fertilizer Works, Chicago, Ill	Found.	5.70	15.11	8.69	8.69	2.05	.41	10.74	*6.84	7.87	32.08	59

64	**Milsom's Buffalo Guano**	Claimed.	1.00	......	8.00	......	......	......	10.00	4.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	0.90	2.39	8.00	8.00	2.23	.45	10.23	5.74	5.74	16.58	64
66	**Niagara's Grain and Grass Grower**	Claimed.	1.00	......	7.00	......	......	......	9.00	1.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.30	3.45	8.38	8.38	1.21	.24	9.59	1.23	1.23	13.30	66
74	**Eureka Phosphate**	Claimed.	1.00	......	7.00	......	......	......	9.00	1.00	......	......	....
	The Western Chemical Co., Chicago, Ill....	Found.	0.80	2.12	8.58	8.58	3.25	.65	11.83	0.85	.85	12.20	74
80	**Grain Manure**	Claimed.	1.00	......	8.00	......	1.00	......	9.00	1.00	......	......	....
	Walker, Stratman & Co., Pittsburg, Pa......	Found.	0.95	2.52	7.35	7.35	1.02	.20	8.37	1.56	1.56	11.63	80
82	**Ohio Vegetable Manure**	Claimed.	1.00	......	8.00	......	......	......	10.00	7.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.15	3.05	8.43	8.43	0.96	.19	9.39	7.17	7.17	18.84	82
83	**Cleveland Dryer's Forest City Buckeye Phos.**	Claimed.	3.00	......	9.00	......	......	......	11.00	2.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	3.00	7.95	9.97	9.97	2.23	.45	12.20	2.64	2.64	21.01	83
84	**Cleveland Dryer's Ohio Seed Maker and Potash**	Claimed.	2.00	......	8.00	......	......	......	10.00	2.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	2.15	5.70	9.92	9.92	1.72	.34	11.64	2.30	2.30	18.26	84
87	**Standard's A Brand**	Claimed.	1.00	......	7.00	......	......	......	9.00	1.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.30	3.45	7.87	7.87	1.08	.22	8.95	1.10	1.10	12.64	87
92	**Harvest King**	Claimed.	1.50	......	8.00	......	......	......	10.00	2.00	......	......	....
	The Abbott & Martin Rend. Co., Columbus, O.	Found.	2.35	6.23	8.64	8.64	2.49	.50	11.13	2.24	2.24	17.61	92
93	**Chicago Brand**	Claimed.	2.00	......	8.00	......	......	......	10.00	2.00	......	......	....
	Darling & Company, Chicago, Ill.	Found.	2.00	5.30	9.39	9.39	2.81	.56	12.20	2.01	2.01	17.26	93
94	**Hamm's Special**	Claimed.	3.00	......	10.00	......	3.00	......	13.00	2.00	......	......	....
	The M. Hamm Co., Washington C. H., Ohio	Found.	4.10	10.87	10.93	10.93	†3.52	1.76	14.45	2.14	2.14	25.70	94
95	**Miami Phosphate**	Claimed.	1.00	......	9.00	......	2.00	......	11.00	3.00	......	......	....
	The Wuichet Fertilizer Co., Dayton, O........	Found.	1.00	2.65	10.41	10.41	1.21	.24	11.62	2.45	2.45	15.75	95
96	**Celery and Potato Grower**	Claimed.	1.00	......	8.00	......	2.00	......	10.00	4.00	......	......	....
	The Armour Fertilizer Works, Chicago, Ill..	Found.	1.20	3.18	9.13	9.13	0.77	.15	9.90	*3.74	4.30	16.76	96

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† From animal matter.

* From sulphate.

TABLE I.—MIXED FERTILIZERS, WITH POTASH—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found	Ammonia		Phosphoric Acid					Potash		Total Value	Record Number
					Available		Insoluble						
			Percent	Value	Percent	Value	Percent	Value	Total Percent	Percent	Value		
97	**Potash Special**	Claimed.	1.00	......	8.00	......	......	......	10.00	4.00	......	......	....
	The Chicago Fertilizer Co., Chicago, Ill......	Found.	1.05	2.78	9.91	9.91	1.92	.38	11.83	3.39	3.39	16.46	97
98	**Garden Manure**	Claimed.	4.00	......	8.00	......	......	......	10.00	7.00	......	......	....
	The Chicago Fertilizer Co., Chicago, Ill......	Found.	3.75	9.94	8.57	8.57	1.85	.37	10.42	7.32	7.32	26.20	98
99	**Superphosphate**	Claimed.	2.00	......	8.00	......	4.00	......	12.00	2.00	......	......	....
	Swift & Company, Chicago, Ill.	Found.	2.20	5.83	7.93	7.93	2.68	.54	10.61	*1.89	2.17	16.47	99
100	**Complete Fertilizer**	Claimed.	1.25	......	8.00	......	3.00	......	11.00	1.00	......	......	....
	Swift & Company, Chicago, Ill.	Found.	1.10	2.92	8.25	8.25	1.59	.32	9.84	*1.04	1.20	12.69	100
101	**Onion, Potato and Tobacco**	Claimed.	2.00	......	8.00	......	3.00	......	11.00	7.00	......	......	....
	Swift & Company, Chicago, Ill.	Found.	2.15	5.70	8.79	8.79	†2.87	1.43	11.66	*5.51	6.34	22.26	101
105	**Complete Plant Food**.........................	Claimed.	1.00	......	10.00	......	1.00	......	11.00	1.00	......	......	....
	The Critchfield Co., Cincinnati, Ohio..........	Found.	1.00	2.65	11.38	11.38	1.79	.36	13.17	*1.30	1.49	15.88	105
106	**Potato and Tobacco Food**......................	Claimed.	1.00	......	8.00	......	1.00	......	9.00	4.00.	......	......	....
	The Critchfield Co., Cincinnati, Ohio..........	Found.	1.05	2.78	6.84	6.84	2.68	.54	9.52	*4.32	4.97	15.13	106
107	**Capital High Grade Guano**.....................	Claimed.	1.00	......	10.00	......	1.00	......	11.00	2.00	......	......	....
	The Cincinnati Phosphate Co., Cincinnati, O..	Found.	0.90	2.39	10.60	10.60	2.05	.41	12.65	*1.95	2.24	15.64	107
108	**Capital Grain and Grass Grower**................	Claimed.	1.00	......	10.00	......	1.00	......	11.00	1.00	......	......	....
	The Cincinnati Phosphate Co., Cincinnati, O..	Found.	0.95	2.52	10.81	10.81	1.98	.40	12.79	*1.35	1.55	15.28	108

112	**Capital Tobacco Food**..........................	Claimed.	1.00	......	8.00	......	1.00	......	9.00	4.00	......	......	....
	The Cincinnati Phosphate Co., Cincinnati, O..	Found.	0.95	2.52	7.35	7.35	2.68	.54	10.03	*3.97	4.57	14.98	112
113	**Dissolved Bone With Potash**....................	Claimed.	1.00	......	10.00	......	......	......	......	2.00	......	......	....
	Geo. A. Bell, Wheelersburg, Ohio............	Found.	0.95	2.52	11.64	11.64	2.43	.49	14.07	1.91	1.91	16.56	113
116	**Peerless Vegetable Grower**....................	Claimed.	2.75	......	8.00	......	1.00	......	9.00	5.00	......	......	....
	The Canton Fertilizer & Chem. Co., Canton, O.	Found.	3.00	7.95	9.16	9.16	1.28	.26	10.44	*5.40	6.21	23.58	116
121	**General Crop Fish Guano**......................	Claimed.	1.00	......	7.00	......	......	......	9.00	1.00	......	......	....
	The Ohio Farmers' Fertilizer Co., Columbus, O.	Found.	1.00	2.65	7.23	7.23	4.02	.80	11.25	0.98	.98	11.66	121
122	**Corn, Oats and Wheat Fish Guano**.............	Claimed.	1.50	......	8.00	......	......	......	10.00	2.00	......	......	....
	The Ohio Farmers' Fertilizer Co., Columbus, O.	Found.	1.45	3.84	7.93	7.93	2.94	.59	10.87	2.14	2.14	14.50	122
123	**Ohio Special**	Claimed.	1.00	......	11.00	......	1.00	......	12.00	1.00	......	......	....
	The Buffalo Fertilizer Co., Buffalo, N. Y.......	Found.	1.35	3.58	11.18	11.18	1.40	.28	12.58	*1.25	1.44	16.48	123
124	**Farmers' Choice**	Claimed.	1.00	......	8.00	......	1.00	......	9.00	5.00	......	......	....
	The Buffalo Fertilizer Co., Buffalo, N. Y.......	Found.	1.25	3.31	9.53	9.53	1.34	.27	10.87	*4.49	5.16	18.27	124
127	**Tobacco and Potato Grower**....................	Claimed.	1.00	......	8.00	......	1.00	......	9.00	4.00	......	......	....
	The Queen City Fertilizer Co., Cincinnati, O..	Found.	0.95	2.52	7.80	7.80	2.49	.50	10.29	*3.34	3.84	14.66	127
128	**Valley Gem Phosphate**.........................	Claimed.	1.00	......	10.00	......	1.00	......	11.00	1.00	......	......	....
	The Queen City Fertilizer Co., Cincinnati, O..	Found.	0.90	2.39	10.29	10.29	1.85	.37	12.14	*0.79	.91	13.96	128
130	**Corn and Wheat Grower**.......................	Claimed.	2.00	......	8.00	......	......	......	10.00	2.00	......	......	....
	The Northwestern Fertilizing Co., Chicago, Ill.	Found.	2.40	6.36	9.08	9.08	3.25	.65	12.33	2.22	2.22	18.31	130
133	**Ten Per Cent. Manure**	Claimed.	1.00	......	5.00	......	2.00	......	7.00	10.00	......	......	....
	The Bowker Fertilizer Co., Cincinnati, O......	Found.	1.35	3.58	6.27	6.27	1.28	.26	7.55	9.83	9.83	19.94	133
134	**Harvest Bone**	Claimed.	1.00	......	8.00	......	2.00	......	10.00	1.00	......	......	....
	The Bowker Fertilizer Co., Cincinnati, O......	Found.	1.40	3.71	9.15	9.15	2.49	.50	11.64	1.02	1.02	14.38	134
137	**Bradley's Potato and Root Phosphate**...........	Claimed.	1.00	......	8.00	......	......	......	10.00	4.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.00	2.65	7.61	7.61	2.62	.52	10.23	4.34	4.34	15.12	137

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† From animal matter.

* From sulphate.

TABLE I.—MIXED FERTILIZERS, WITH POTASH—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found	Ammonia		Phosphoric Acid					Potash		Total Value	Record Number
					Available		Insoluble		Total Percent				
			Percent	Value	Percent	Value	Percent	Value		Percent	Value		
140	**Cleveland Dryer's Phospho Bone**	Claimed.	1.00	......	10.00	......	......	......	12.00	1.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.05	2.78	9.85	9.85	3.84	.77	13.69	1.18	1.18	14.58	140
142	**Crocker's Potato, Hop and Tobacco Phosphate**...	Claimed.	2.50	......	8.00	......	......	......	10.00	3.00	......	......	....
	The Amer. Agri. Chem. Co, New York, N. Y.	Found.	2.50	6.63	9.08	9.08	2.30	.46	11.38	2.74	2.74	18.91	142
143	**Crocker's Wheat and Corn Phosphate**	Claimed.	2.50	......	8.00	......	......	......	10.00	1.50	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	2.40	6.36	8.24	8.24	2.56	.51	10.80	1.52	1.52	16.63	143
144	**Crocker's General Crop Phosphate**	Claimed.	1.00	......	7.00	......	......	......	9.00	1.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.30	3.45	8.95	8.95	1.98	.40	10.93	0.81	.81	13.61	144
147	**Milsom's Wheat, Oats and Barley**	Claimed.	1.00	......	8.00	......	......	......	10.00	2.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.30	3.45	8.82	8.82	2.05	.41	10.87	1.99	1.99	14.67	147
148	**Milsom's Erie King**	Claimed.	1.00	......	7.00	......	......	......	9.00	1.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.35	3.58	7.54	7.54	1.21	.24	8.75	1.25	1.25	12.61	148
150	**Pacific's Potato Phosphate**	Claimed.	1.00	......	8.00	......	......	......	10.00	4.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.20	3.18	8.64	8.64	2.36	.47	11.00	3.93	3.93	16.22	150
151	**Pacific's A. No. 1 Phosphate**	Claimed.	1.00	......	7.00	......	......	......	9.00	1.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.30	3.45	8.64	8.64	2.23	.45	10.87	1.10	1.10	13.64	151
155	**Bradley's Niagara Phosphate**	Claimed.	1.00	......	7.00	......	......	......	9.00	1.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.25	3.31	7.49	7.49	1.08	.22	8.57	1.22	1.22	12.24	155

156	**Clevel'd Dryer's Potato, Tob. and Gen. Crop Fert.** The Amer. Agri. Chem. Co., New York, N. Y.	Claimed.	1.00	......	8.00	......	......	......	10.00	4.00	......	......	....
		Found.	1.05	2.78	7.86	7.86	2.23	.45	10.09	4.18	4.18	15.27	156
158	**Ammoniated Bone and Potash** .... Swift & Company, Chicago, Ill.	Claimed.	5.75	......	......	......	......	......	16.00	3.00	......	......	....
		Found.	6.55	17.36	9.40	9.40	†6.27	3.13	15.67	2.79	2.79	32.68	158
160	**Big Four, Pure Bone Phosphate** .... Nelson Morris & Co., Chicago, Ill.	Claimed.	5.30	......	4.52	......	5.78	......	10.30	3.90	......	......	....
		Found.	5.35	14.18	10.09	10.09	1.92	.38	12.01	*4.53	5.21	29.86	160
162	**Fish Guano** .... The Bowker Fertilizer Co., Cincinnati, O.	Claimed.	1.00	......	8.00	......	1.00	......	9.00	3.00	......	......	....
		Found.	1.25	3.31	8.82	8.82	2.49	.50	11.31	2.93	2.93	15.56	162
163	**Potato Grower** .... The Northwestern Fertilizing Co., Chicago, Ill.	Claimed.	3.00	......	9.00	......	......	......	11.00	2.00	......	......	....
		Found.	2.75	7.29	9.91	9.91	2.49	.50	12.40	2.22	2.22	19.92	163
164	**Farmers' Favorite Brand** .... Darling & Company, Chicago, Ill.	Claimed.	3.00	......	8.00	......	......	......	10.00	4.00	......	......	....
		Found.	3.05	8.08	9.28	9.28	†5.56	2.78	14.84	*4.05	4.66	24.80	164
165	**Sure Winner Brand**............................ Darling & Company, Chicago, Ill.	Claimed.	1.00	......	8.00	......	......	......	10.00	3.00	......	......	....
		Found.	1.25	3.31	8.63	8.63	1.34	.27	9.97	3.20	3.20	15.41	165
166	**Western Brand** .... Darling & Company, Chicago, Ill.	Claimed.	0.50	......	7.00	......	......	......	9.00	0.50	......	......	....
		Found.	0.70	1.86	7.54	7.54	1.21	.24	8.75	1.04	1.04	10.68	166
167	**General Crop Brand**........................... Darling & Company, Chicago, Ill.	Claimed.	1.00	......	8.00	......	......	......	10.00	6.00	......	......	....
		Found.	1.35	3.58	8.82	8.82	1.21	.24	10.03	6.53	6.53	19.17	167
168	**Potato Special** .... Walker, Stratman & Co., Pittsburg, Pa........	Claimed.	3.00	......	8.00	......	2.00	......	10.00	6.00	......	......	....
		Found.	3.55	9.41	7.04	7.04	2.17	.43	9.21	5.26	5.26	22.14	168
169	**Meat, Blood and Bone With Potash**............ Walker, Stratman & Co., Pittsburg, Pa........	Claimed.	4.00	......	8.00	......	2.00	......	10.00	8.00	......	......	....
		Found.	3.85	10.20	6.59	6.59	2.74	.55	9.33	7.47	7.47	24.81	169
170	**Number One Fish Guano**....................... The Jarecki Chem. Co., Sandusky & Cin'ti, O..	Claimed.	1.00	......	10.00	......	1.00	......	11.00	1.00	......	......	....
		Found.	1.00	2.65	10.94	10.94	2.36	.47	13.30	*1.16	1.33	15.39	170
171	**Eagle Corn and Wheat Grower**................. The Globe Fertilizer Co., Louisville, Ky......	Claimed.	2.00	......	8.00	......	1.00	......	9.00	2.00	......	......	....
		Found.	1.50	3.98	8.63	8.63	0.96	.19	9.59	*2.06	2.37	15.17	171

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† From animal matter.

* From sulphate.

TABLE I.—MIXED FERTILIZERS, WITH POTASH—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found	Ammonia		Phosphoric Acid					Potash		Total Value	Record Number
					Available		Insoluble		Total Percent				
			Percent	Value	Percent	Value	Percent	Value		Percent	Value		
172	**Wheat Maker and Seeding Down**............	Claimed.	0.50	......	8.00	......	......	......	10.00	2.50	......	......	....
	The Ohio Farmers' Fert. Co., Columbus, O..	Found.	0.55	1.46	9.21	9.21	2.62	.52	11.83	2.22	2.22	13.41	172
174	**Raw Bone and Phosphate**......................	Claimed.	2.00	......	10.00	......	6.00	......	16.00	1.50	......	......	....
	The Wuichet Fertilizer Co., Dayton, O.	Found.	1.45	3.84	12.60	12.60	6.27	1.25	18.87	1.60	1.60	19.29	174
175	**Spot Cash Fertilizer**..........................	Claimed.	2.00	......	10.00	......	2.00	......	12.00	2.00	......	......	....
	The Wuichet Fertilizer Co., Dayton, O.	Found.	1.85	4.90	11.96	11.96	2.11	.42	14.07	1.99	1.99	19.27	175
176	**Miami Valley Grain Grower**....................	Claimed.	1.00	......	10.00	......	1.00	......	11.00	2.00	......	......	....
	The Queen City Fertilizer Co., Cincinnati, O..	Found.	0.95	2.52	10.10	10.10	2.23	.45	12.33	*2.10	2.41	15.48	176
178	**Western Bone Black and Potash**................	Claimed.	0.50	......	8.00	......	......	......	10.00	2.50	......	......	....
	The Chicago Fertilizer Co., Chicago, Ill......	Found.	0.50	1.33	8.31	8.31	3.00	.60	11.31	2.31	2.31	12.55	178
179	**Bone, Blood and Potash**.......................	Claimed.	1.50	......	8.00	......	......	......	10.00	2.00	......	......	....
	The Chicago Fertilizer Co., Chicago, Ill......	Found.	1.65	4.37	8.20	8.20	2.11	.42	10.31	2.30	2.30	15.29	179
181	**Wheat and Corn Special**.......................	Claimed.	1.00	......	7.00	......	......	......	9.00	1.00	......	......	....
	The Chicago Fertilizer Co., Chicago, Ill......	Found.	1.05	2.78	7.55	7.55	4.22	.84	11.77	0.96	.96	12.13	181
182	**Bone Phosphate**	Claimed.	1.00	......	10.00	......	1.00	......	11.00	1.00	......	......	....
	The Packers' Fertilizer Co., Cincinnati, O.....	Found.	0.90	2.39	10.35	10.35	2.17	.43	12.52	*1.37	1.58	14.75	182
183	**Animal Guano and Potash**....................	Claimed.	1.00	......	8.00	......	1.00	......	9.00	4.00	......	......	....
	The Packers' Fertilizer Co., Cincinnati, O.....	Found.	1.00	2.65	7.80	7.80	1.79	.36	9.59	*4.95	5.69	16.50	183

184	**Crop Producer**	Claimed.	1.00	......	7.00	......	......	......	9.00	1.00	......	......	....
	The Hardy Packing Co., Chicago, Ill.	Found.	1.20	3.18	8.17	8.17	2.56	.51	10.73	*1.08	1.24	13.10	184
185	**Corn and Wheat Grower**	Claimed.	0.50	......	8.00	......	......	......	10.00	2.50	......	......	....
	The Hardy Packing Co., Chicago, Ill.	Found.	0.65	1.72	8.18	8.18	3.46	.69	11.64	2.66	2.66	13.25	185
186	**Tankage, Bone and Potash**	Claimed.	1.50	......	8.00	......	......	......	10.00	2.00	......	......	....
	The Hardy Packing Co., Chicago, Ill.	Found.	1.75	4.64	7.68	7.68	3.25	.65	10.93	2.33	2.33	15.30	186
188	**Lake Erie Fish Guano**	Claimed.	1.00	......	10.00	......	1.00	......	11.00	2.00	......	......	....
	The Jarecki Chem. Co., Sandusky and Cin., O.	Found.	0.70	1.86	10.16	10.16	1.85	.37	12.01	*1.79	2.06	14.45	188
189	**Fish and Potash Grain Special**	Claimed.	1.50	......	9.00	......	1.00	......	10.00	2.00	......	......	....
	The Jarecki Chem. Co., Sandusky and Cin., O.	Found.	1.15	3.05	9.71	9.71	2.56	.51	12.27	*1.77	2.04	15.31	189
191	**Fish and Potash Tobacco and Potato Food**	Claimed.	1.00	......	8.00	......	1.00	......	9.00	4.00	......	......	....
	The Jarecki Chem. Co., Sandusky and Cin., O.	Found.	0.95	2.52	7.55	7.55	2.94	.59	10.49	*3.78	4.35	15.01	191
192	**O. K. Fertilizer**	Claimed.	0.50	......	6.00	......	1.00	......	7.00	0.50	......	......	....
	The Jarecki Chem. Co., Sandusky and Cin., O.	Found.	0.75	1.99	7.02	7.02	1.53	.31	8.55	*0.81	.93	10.25	192
196	**Fish Guano**	Claimed.	1.00	......	10.00	......	1.00	......	11.00	1.00	......	......	....
	The E. Rauh & Sons Fert. Co., Indianapolis, Ind.	Found.	1.05	2.78	10.80	10.80	2.56	.51	13.36	1.54	1.54	15.63	196
197	**Dissolved Bone and Potash**	Claimed.	1.00	......	8.00	......	1.00	......	9.00	3.00	......	......	....
	The E. Rauh & Sons Fert. Co., Indianapolis, Ind.	Found.	0.95	2.52	9.68	9.68	2.43	.49	12.11	*2.72	3.13	15.82	197
198	**Our Special**	Claimed.	2.00	......	10.00	......	1.00	......	11.00	6.00	......	......	....
	The E. Rauh & Sons Fert. Co., Indianapolis, Ind.	Found.	1.50	3.98	11.64	11.64	1.21	.24	12.85	*5.20	5.98	21.84	198
199	**Entire Bone Phosphate**	Claimed.	1.00	......	7.00	......	2.00	......	9.00	1.00	......	......	....
	The Western Union Chem. Co., Cleveland, O.	Found.	1.40	3.71	7.93	7.93	1.02	.20	8.95	1.18	1.18	13.02	199
203	**Great Eastern's Vegetable, Vine and Tobacco**	Claimed.	2.50	......	8.00	......	......	......	10.00	3.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	2.70	7.16	8.83	8.83	2.17	.43	11.00	3.72	3.72	20.14	203
204	**Great Eastern's English Wheat Grower**	Claimed.	1.00	......	8.00	......	......	......	10.00	2.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.35	3.58	9.08	9.08	2.05	.41	11.13	2.06	2.06	15.13	204

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† From animal matter.

* From sulphate.

TABLE I.—MIXED FERTILIZERS, WITH POTASH—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found	Ammonia		Phosphoric Acid					Potash		Total Value	Record Number
					Available		Insoluble		Total Percent				
			Percent	Value	Percent	Value	Percent	Value		Percent	Value		
206	**Quinnipiac's Climax Phosphate**	Claimed.	1.25	......	8.00	......	......	......	10.00	2.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.60	4.24	8.31	8.31	3.00	.60	11.31	1.83	1.83	14.98	206
207	**Quinnipiac's Special Potato**	Claimed.	1.00	......	8.00	......	......	......	10.00	4.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.20	3.18	8.76	8.76	2.62	.52	11.38	4.66	4.66	17.12	207
208	**Quinnipiac's Corn and Wheat Grower**	Claimed.	1.00	......	10.00	......	......	......	12.00	1.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.30	3.45	9.91	9.91	3.52	.70	13.43	1.45	1.45	15.51	208
212	**Banner Phosphate**	Claimed.	1.00	......	8.00	......	1.00	......	9.00	2.00	......	......	....
	The Allegheny City Fert. Wks., Allegheny, Pa.	Found.	1.55	4.11	6.34	6.34	1.08	.22	7.42	2.45	2.45	13.12	212
213	**Ammoniated Bone Black**	Claimed.	1.50	......	8.00	......	1.00	......	9.00	2.50	......	......	....
	The Buffalo Fertilizer Co., Buffalo, N. Y.	Found.	1.55	4.11	8.30	8.30	2.47	.49	10.77	*2.20	2.53	15.43	213
216	**Ammoniated Bone Superphosphate**	Claimed.	2.00	......	8.00	......	1.00	......	9.00	2.00	......	......	....
	S. M. Hess & Bro., Philadelphia, Pa.	Found.	2.30	6.10	9.59	9.59	1.85	.37	11.44	2.31	2.31	18.37	216
217	**Keystone Bone Phosphate**	Claimed.	1.00	......	8.00	......	2.00	......	10.00	1.00	......	......	....
	S. M. Hess & Bro., Philadelphia, Pa.	Found.	1.40	3.71	7.55	7.55	1.66	.33	9.21	1.27	1.27	12.86	217
218	**Potato and Truck Manure**	Claimed.	3.00	......	8.00	......	2.00	......	10.00	6.00	......	......	....
	S. M. Hess & Bro., Philadelphia, Pa.	Found.	3.95	10.47	7.42	7.42	1.40	.28	8.82	5.63	5.63	23.80	218
222	**Special Corn Manure**	Claimed.	1.00	......	8.00	......	1.00	......	9.00	2.00	......	......	....
	S. M. Hess & Bro., Philadelphia, Pa.	Found.	1.50	3.98	8.57	8.57	1.08	.22	9.65	2.26	2.26	15.03	222

224	**Ammoniated Phosphate**	Claimed.	1.00	......	7.00	......	2.00	......	9.00	1.00	......	......	....
	The Tuscarora Fertilizer Co., Chicago, Ill ...	Found.	1.20	3.18	6.85	6.85	1.46	.29	8.31	1.64	1.64	11.96	224
226	**Homestead A Bone Black**	Claimed.	2.50	......	8.00	......	......	......	10.00	1.50	......	......	....
	Michigan Carbon Works, Detroit, Mich.	Found.	2.65	7.02	9.12	9.12	1.81	.36	10.93	1.85	1.85	18.35	226
229	**Common Sense**	Claimed.	2.00	......	6.00	......	......	......	7.00	1.00	......	......	....
	The American Reduction Co., Pittsburg, Pa...	Found.	2.35	6.23	4.99	4.99	1.08	.22	6.07	0.83	.83	12.27	229
230	**Pittsburg Guano**	Claimed.	1.50	......	8.00	......	......	......	9.00	1.00	......	......	....
	The American Reduction Co., Pittsburg, Pa...	Found.	1.90	5.04	7.22	7.22	1.28	.26	8.50	1.35	1.35	13.87	230
233	**Perfection Tomato Grower**	Claimed.	1.00	......	8.00	......	1.00	......	9.00	5.00	......	......	....
	The Jarecki Chem. Co., Sandusky and Cin., O.	Found.	1.25	3.31	8.75	8.75	2.56	.51	11.31	4.59	4.59	17.16	233
234	**Sweepstakes Bone**	Claimed.	1.00	......	10.00	......	1.00	......	11.00	2.00	......	......	....
	The Packers' Fertilizer Co., Cincinnati, O.	Found.	1.25	3.31	8.95	8.95	2.49	.50	11.44	1.99	1.99	14.75	234
236	**Excelsior Guano**	Claimed.	1.00	......	8.00	......	......	......	10.00	7.00	......	......	....
	The Ohio Farmers' Fert. Co., Columbus, O. ..	Found.	1.30	3.45	8.50	8.50	2.81	.56	11.31	6.01	6.01	18.52	236
238	**Corn and Wheat Grower**	Claimed.	1.00	......	10.00	......	1.00	......	......	1.00	......	......	....
	Dahl & Miller, Washington C. H., O..........	Found.	1.10	2.92	10.68	10.68	2.17	.43	12.85	*1.74	2.00	16.03	238
239	**Complete Fertilizer**	Claimed.	0.50	......	8.00	......	2.00	......	10.00	2.50	......	......	....
	The Buckeye Fertilizer Co., Columbus, O......	Found.	0.45	1.19	8.76	8.76	2.11	.42	10.87	2.55	2.55	12.92	239
243	**Corn and Wheat Grower**	Claimed.	1.00	......	8.00	......	1.00	......	9.00	2.00	......	......	....
	The E. Rauh & Sons Fert.Co.,Indianapolis, Ind.	Found.	0.95	2.52	10.43	10.43	3.64	.73	14.07	1.49	1.49	15.17	243
245	**Fruit and Root Crop Special**	Claimed.	2.00	......	8.00	......	2.00	......	10.00	5.00	......	......	....
	The Armour Fertilizer Works, Chicago, Ill.	Found.	2.60	6.89	8.95	8.95	0.70	.14	9.65	*5.03	5.78	21.76	245
248	**Garden City Superphosphate**	Claimed.	2.50	......	8.00	......	......	......	10.00	1.50	......	......	....
	The Northwestern Fert. Co., Chicago, Ill.	Found.	2.95	7.82	9.08	9.08	2.05	.41	11.13	1.64	1.64	18.95	248
249	**Acidulated Bone and Potash**	Claimed.	1.00	......	10.00	......	......	......	12.00	1.00	......	......	....
	The Northwestern Fert. Co., Chicago, Ill.	Found.	1.10	2.92	10.49	10.49	2.81	.56	13.30	1.00	1.00	14.97	249

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† From animal matter.

* From sulphate.

TABLE I.—MIXED FERTILIZERS, WITH POTASH—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found	Ammonia		Phosphoric Acid					Potash		Total Value	Record Number
					Available		Insoluble		Total Percent				
			Percent	Value	Percent	Value	Percent	Value		Percent	Value		
251	**Great Eastern's Wheat Special**	Claimed.	2.00	......	8.00	......	......	......	10.00	2.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	2.45	6.49	9.27	9.27	2.43	.49	11.70	2.24	2.24	18.49	251
253	**Packers' Union Universal Fertilizer**	Claimed.	1.00	......	8.00	......	......	......	10.00	4.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.35	3.58	9.20	9.20	2.11	.42	11.31	4.66	4.66	17.86	253
257	**Ohio Farmer Bone Phosphate**	Claimed.	1.00	......	10.00	......	2.00	......	12.00	1.00	......	......	....
	The Western Union Chem. Co., Cleveland, O.	Found.	1.25	3.31	10.11	10.11	1.66	.33	11.77	1.20	1.20	14.95	257
259	**Bone, Blood and Potash**	Claimed.	0.50	......	11.00	......	1.00	......	12.00	1.00	......	......	....
	The Fox Chemical Co., Louisville, Ky.	Found.	0.80	2.12	11.56	11.56	1.15	.23	12.71	0.98	.98	14.89	259
263	**Truck Grower**	Claimed.	1.00	......	8.00	......	2.00	......	10.00	4.00	......	......	....
	Swift & Company, Chicago, Ill.	Found.	1.15	3.05	8.06	8.06	1.53	.31	9.59	*4.26	4.90	16.32	263
264	**Improved Superphosphate**	Claimed.	1.00	......	10.00	......	2.00	......	12.00	1.00	......	......	....
	The I. P. Thomas & Son Co., Phila., Pa.	Found.	1.20	3.18	9.52	9.52	1.15	.23	10.67	1.49	1.49	14.42	264
266	**Thomas' Wheat and Corn Fertilizer**	Claimed.	1.00	......	9.00	......	2.00	......	11.00	3.00	......	......	....
	The I. P. Thomas & Son Co., Phila., Pa.	Found.	1.30	3.45	8.94	8.94	1.15	.23	10.09	3.43	3.43	16.05	266
268	**Akron Phosphate**	Claimed.	1.00	......	8.00	......	2.00	......	10.00	2.50	......	......	....
	The Akron Fertilizer Co., Akron, Ohio	Found.	1.45	3.84	9.60	9.60	1.40	.28	11.00	1.37	1.37	15.09	268
270	**Peerless Bone and Potash**	Claimed.	0.50	......	8.00	......	......	......	10.00	2.50	......	......	....
	The Abbott & Martin Rend. Co., Columbus, O.	Found.	0.50	1.33	9.02	9.02	2.17	.43	11.19	2.45	2.45	13.23	270

272	**Read's Standard**	Claimed.	1.00	......	8.00	......	......	......	10.00	4.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.35	3.58	8.57	8.57	1.72	.34	10.29	3.70	3.70	16.19	272
274	**Packers' Union Potato Manure**	Claimed.	2.50	......	8.00	......	......	......	10.00	6.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	2.25	5.96	9.02	9.02	1.21	.24	10.23	6.20	6.20	21.42	274
278	**Braden Formula**	Claimed.	1.00	......	11.00	......	1.00	......	12.00	3.00	......	......	....
	The Globe Fertilizer Co., Louisville, Ky.	Found.	1.15	3.05	11.63	11.63	1.08	.22	12.71	*3.07	3.53	18.43	278
279	**Bone and Potash**	Claimed.	0.50	......	11.00	......	1.00	......	12.00	1.00	......	......	....
	The Globe Fertilizer Co., Louisville, Ky.	Found.	0.75	1.99	11.96	11.96	1.02	.20	12.98	*1.10	1.26	15.41	279
280	**Century**	Claimed.	2.00	......	10.00	......	2.00	......	12.00	2.00	......	......	....
	L. Frank & Sons, Zanesville, Ohio	Found.	2.15	5.70	9.98	9.98	1.59	.32	11.57	1.97	1.97	17.97	280
282	**Potato Phosphate**	Claimed.	2.00	......	9.00	......	2.00	......	11.00	6.00	......	......	....
	L. Frank & Sons, Zanesville, Ohio	Found.	2.30	6.10	9.91	9.91	0.83	.17	10.74	*6.19	7.12	23.30	282
285	**Grain King**	Claimed.	1.00	......	9.00	......	1.00	......	10.00	4.00	......	......	....
	Walker, Stratman & Co., Pittsburg, Pa.	Found.	1.75	4.64	6.91	6.91	1.08	.22	7.99	3.85	3.85	15.62	285
286	**Corn and Potato Fertilizer**	Claimed.	2.00	......	9.00	......	2.00	......	11.00	3.00	......	......	....
	The Pitts. Prov. and Pack. Co., Pittsburg, Pa.	Found.	2.00	5.30	6.90	6.90	4.35	.87	11.25	*2.48	2.85	15.92	286
287	**Keystone Fertilizer**	Claimed.	2.00	......	9.00	......	2.00	......	11.00	1.50	......	......	....
	The Pitts. Prov. and Pack. Co., Pittsburg, Pa.	Found.	2.45	6.49	6.84	6.84	4.73	.95	11.57	*1.29	1.48	15.76	287
289	**Special Compound**	Claimed.	1.00	......	8.00	......	1.00	......	9.00	4.00	......	......	....
	S. M. Hess & Bro., Philadelphia, Pa.	Found.	1.50	3.98	7.67	7.67	1.72	.34	9.39	4.76	4.76	16.75	289
290	**Fruit and Potato**	Claimed.	2.00	......	8.00	......	2.00	......	10.00	10.00	......	......	....
	The Tuscarora Fertilizer Co., Chicago, Ill.	Found.	2.15	5.70	7.73	7.73	2.94	.59	10.67	10.20	10.20	24.22	290
292	**Ammoniated Bone with Potash**	Claimed.	3.00	......	6.00	......	2.00	......	8.00	2.00	......	......	....
	The Armour Fertilizer Works, Chicago, Ill.	Found.	3.55	9.41	7.86	7.86	1.28	.26	9.14	*2.90	3.33	20.86	292
293	**High-Grade Potato**	Claimed.	2.00	......	8.00	......	2.00	......	10.00	10.00	......	......	....
	The Armour Fertilizer Works, Chicago, Ill.	Found.	1.85	4.90	7.87	7.87	2.62	.52	10.49	9.21	9.21	22.50	293

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† From animal matter.

* From sulphate.

TABLE I.—Mixed Fertilizers, with Potash—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found	Ammonia		Phosphoric Acid					Potash		Total Value	Record Number
					Available		Insoluble		Total Percent				
			Percent	Value	Percent	Value	Percent	Value		Percent	Value		
295	**Record Brand**	Claimed.	1.00	......	10.00	......	2.00	......	12.00	1.00	......	......	....
	The Armour Fertilizer Works, Chicago, Ill.	Found.	1.45	3.84	10.23	10.23	0.38	.08	10.61	1.14	1.14	15.29	295
296	**Grain Special**	Claimed.	0.50	......	9.00	......	1.00	......	10.00	1.50	......	......	....
	The Fox Chemical Co., Louisville, Ky.	Found.	0.80	2.12	9.98	9.98	1.21	.24	11.19	*1.47	1.69	14.03	296
297	**Wheat and Corn Grower**	Claimed.	2.00	......	10.00	......	......	......	......	2.00	......	......	....
	The Fox Chemical Co., Louisville, Ky.	Found.	2.60	6.89	8.31	8.31	1.08	.22	9.39	*2.74	3.15	18.57	297
299	**Bradley's B. D. Sea Fowl Guano**	Claimed.	2.50	......	8.00	......	......	......	10.00	1.50	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	2.60	6.89	8.51	8.51	2.49	.50	11.00	1.85	1.85	17.75	299
300	**Bradley's Corn and Wheat Phosphate**	Claimed.	1.00	......	10.00	......	......	......	12.00	1.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.50	3.98	10.68	10.68	1.72	.34	12.40	1.41	1.41	16.41	300
301	**Clark's Cove Defiance Complete Manure**	Claimed.	1.00	......	7.00	......	......	......	9.00	1.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.45	3.84	8.35	8.35	2.36	.47	10.71	1.37	1.37	14.03	301
302	**Clark's Cove Potato Phosphate**	Claimed.	1.00	......	8.00	......	......	......	10.00	4.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.25	3.31	7.86	7.86	2.11	.42	9.97	4.15	4.15	15.74	302
306	**M. E. Wheeler's Corn Fertilizer**	Claimed.	2.00	......	8.00	......	......	......	10.00	2.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	2.20	5.83	9.21	9.21	1.98	.40	11.19	2.43	2.43	17.87	306
307	**Tobacco and Potato Special**	Claimed.	2.00	......	8.00	......	......	......	10.00	4.00	......	......	....
	The Abbott & Martin Rend. Co., Columbus, O.	Found.	2.25	5.96	8.56	8.56	1.59	.32	10.15	4.11	4.11	18.95	307

308	**Monarch**	Claimed.	1.00	......	8.00	......	1.00	......	9.00	3.00	......	......	....
	L. Frank & Sons, Zanesville, Ohio	Found.	0.80	2.12	8.18	8.18	1.34	.27	9.52	2.91	2.91	13.48	308
310	**Fox Formula**	Claimed.	1.00	......	11.00	......	1.00	......	12.00	3.00	......	......	....
	The Fox Chemical Co., Louisville, Ky.	Found.	1.05	2.78	12.92	12.92	0.77	.15	13.69	*2.20	2.53	18.38	310
314	**Red Line Complete Manure**	Claimed.	1.00	......	7.00	......	......	......	9.00	1.00	......	......	....
	Michigan Carbon Works, Detroit, Mich.	Found.	1.35	3.58	8.25	8.25	0.83	.17	9.08	1.34	1.34	13.34	314
318	**Detrick's Imperial Compound**	Claimed.	1.00	......	8.00	......	......	......	10.00	2.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.15	3.05	8.63	8.63	0.96	.19	9.59	2.20	2.20	14.07	318
321	**Packers' Union American Wheat and Rye Grower**	Claimed.	1.00	......	8.00	......	......	......	10.00	2.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.35	3.58	9.47	9.47	2.30	.46	11.77	2.01	2.01	15.52	321
322	**Packers' Union Animal Corn Fertilizer**	Claimed.	3.00	......	9.00	......	......	......	11.00	2.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	3.05	8.08	9.27	9.27	2.56	.51	11.83	2.84	2.84	20.70	322
323	**Peerless Lawn Fertilizer**	Claimed.	2.00	......	8.00	......	......	......	10.00	2.00	......	......	....
	The Canton Fert. and Chem. Co., Canton, O.	Found.	1.30	3.45	7.22	7.22	0.96	.19	8.18	1.39	1.39	12.25	323
326	**Champion Wheat and Corn Grower**	Claimed.	2.00	......	12.00	......	1.00	......	13.00	2.00	......	......	....
	Swift & Company, Chicago, Ill.	Found.	2.10	5.57	13.43	13.43	†2.62	1.31	16.05	2.01	2.01	22.32	326
328	**Grain and Grass Grower**	Claimed.	1.00	......	7.00	......	2.00	......	9.00	1.00	......	......	....
	The Buckeye Fertilizer Co., Columbus, Ohio	Found.	0.85	2.25	8.13	8.13	3.64	.73	11.77	1.02	1.02	12.13	328
330	**Farmers' Union Potato, Tobacco and Truck**	Claimed.	2.50	......	8.00	......	......	......	10.00	3.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	2.65	7.02	9.08	9.08	1.34	.27	10.42	2.74	2.74	19.11	330
335	**Niagara's Wheat and Corn Producer**	Claimed.	1.50	......	9.00	......	......	......	11.00	2.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.95	5.17	10.80	10.80	1.40	.28	12.20	2.49	2.49	18.74	335
336	**M. E. Wheeler's Potato Manure**	Claimed.	2.50	......	8.00	......	......	......	10.00	3.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	2.60	6.89	9.08	9.08	1.79	.36	10.87	3.01	3.01	19.34	336
337	**Vegetable Manure**	Claimed.	3.00	......	6.00	......	......	......	7.00	6.00	......	......	....
	The American Reduction Co., Pittsburg, Pa.	Found.	2.80	7.42	6.15	6.15	1.15	.23	7.30	*5.32	6.12	19.92	337

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† From animal matter.

* From sulphate.

TABLE I.—MIXED FERTILIZERS, WITH POTASH—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found	Ammonia		Phosphoric Acid					Potash		Total Value	Record Number
					Available		Insoluble		Total Percent				
			Percent	Value	Percent	Value	Percent	Value		Percent	Value		
338	**Belmont Superphosphate**	Claimed.	1.00	......	8.00	......	......	......	......	3.00	......	......	....
	The Belmont Phosphate Co., Colerain, O.....	Found.	0.95	2.52	8.82	8.82	1.92	.38	10.74	3.01	3.01	14.73	338
339	**Erie Phosphate**	Claimed.	1.00	......	8.00	......	......	......	10.00	4.00	......	......	....
	The Western Chemical Co., Chicago, Ill....	Found.	1.20	3.18	8.69	8.69	2.62	.52	11.31	3.84	3.84	16.23	339
342	**Harvest King**	Claimed.	1.25	......	8.00	......	......	......	......	2.00	......	......	....
	The Kaufman Fertilizer Co., Indianapolis, Ind.	Found.	0.95	2.52	7.73	7.73	1.02	.20	8.75	1.41	1.41	11.86	342
343	**Banner Crop Grower**	Claimed.	1.00	......	7.00	......	......	......	......	1.00	......	......	....
	The Kaufman Fertilizer Co., Indianapolis, Ind.	Found.	0.55	1.46	7.35	7.35	0.96	.19	8.31	0.82	.82	9.82	343
344	**Bone Tankage and Potash**	Claimed.	0.50	......	7.00	......	......	......	......	0.50	......	......	....
	The Kaufman Fertilizer Co., Indianapolis, Ind.	Found.	0.85	2.25	7.90	7.90	1.15	.23	9.05	0.46	.46	10.84	344
345	**Potato Manure**	Claimed.	3.00	......	9.00	......	2.00	......	11.00	6.00	......	......	....
	The I. P. Thomas & Son Co., Phila., Pa.	Found.	2.90	7.69	8.37	8.37	2.05	.41	10.42	6.11	6.11	22.58	345
348	**Potato and Truck Manure**	Claimed.	1.50	......	8.00	......	1.00	......	9.00	7.00	......	......	....
	The International Seed Co., Rochester, N. Y.	Found.	1.65	4.37	8.24	8.24	2.56	.51	10.80	7.34	7.34	20.46	348
351	**Potato, Tobacco and Corn Fertilizer**	Claimed.	2.00	......	8.00	......	1.00	......	9.00	5.00	......	......	....
	The I. P. Thomas & Son Co., Phila., Pa.	Found.	1.85	4.90	9.72	9.72	1.15	.23	10.87	*4.82	5.54	20.39	351
352	**Superior Superphosphate**	Claimed.	1.00	......	7.00	......	1.00	......	8.00	1.00	......	......	....
	The I. P. Thomas & Son Co., Phila., Pa.	Found.	0.90	2.39	7.68	7.68	1.46	.29	9.14	1.29	1.29	11.65	352

354	**Homestead Potato and Tobacco Fertilizer**	Claimed.	2.50	......	8.00	......	......	......	10.00	3.00	......	......	....
	Michigan Carbon Works, Detroit, Mich.	Found.	2.75	7.29	8.83	8.83	2.17	.43	11.00	3.36	3.36	19.91	354
356	**Bone Dust**	Claimed.	1.00	......	9.00	......	1.00	......	10.00	1.00	......	......	....
	The Globe Fertilizer Co., Louisville, Ky.	Found.	1.65	4.37	10.42	10.42	1.02	.20	11.44	*1.35	1.55	16.54	356
360	**Fish Guano**	Claimed.	1.50	......	9.00	......	1.00	......	10.00	2.00	......	......	....
	The Critchfield Co., Cincinnati, O.	Found.	1.10	2.92	10.74	10.74	1.66	.33	12.40	*1.89	2.17	16.16	360
362	**Animal Bone and Potash**	Claimed.	1.00	......	10.00	......	2.00	......	12.00	1.00	......	......	....
	The Ohio Bone & Phosphate Co., Orrville, O.	Found.	1.25	3.31	10.28	10.28	0.70	.14	10.98	*1.27	1.46	15.19	362
364	**Wheat and Corn Special**	Claimed.	0.50	......	9.00	......	2.00	......	11.00	3.00	......	......	....
	The Ohio Bone & Phosphate Co., Orrville, O.	Found.	0.15	.40	9.50	9.50	1.40	.28	10.90	*2.72	3.13	13.31	364
365	**Standard Phosphate**	Claimed.	2.00	......	8.00	......	......	......	10.00	2.00	......	......	....
	The Western Chemical Co., Chicago, Ill.	Found.	1.55	4.11	7.67	7.67	2.94	.59	10.61	2.82	2.82	15.19	365
367	**Complete Fertilizer**	Claimed.	1.00	......	11.00	......	1.00	......	12.00	1.00	......	......	....
	The Central Ohio Fertilizer Co., Mt. Vernon, O.	Found.	1.40	3.71	12.73	12.73	0.96	.19	13.69	*1.25	1.44	18.07	367
371	**Williams & Clarks' Good Grower Potato Phos.**	Claimed.	1.00	......	8.00	......	......	......	10.00	4.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.40	3.71	7.98	7.98	2.11	.42	10.09	4.66	4.66	16.77	371
376	**Milsom's Buffalo Fertilizer**	Claimed.	2.50	......	8.00	......	......	......	10.00	1.50	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	2.60	6.89	8.69	8.69	1.98	.40	10.67	2.01	2.01	17.99	376
380	**Zell's Economizer**	Claimed.	1.00	......	8.00	......	......	......	10.00	2.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.40	3.71	8.82	8.82	1.15	.23	9.97	2.30	2.30	15.06	380
382	**Sheldon's Farmers' Favorite**	Claimed.	1.00	......	8.00	......	1.00	......	9.00	2.00	......	......	....
	The Schaal-Sheldon Fertilizer Co., Erie, Pa.	Found.	1.40	3.71	7.29	7.29	2.49	.50	9.78	2.08	2.08	13.58	382
383	**Sheldon's Guano**	Claimed.	1.00	......	8.00	......	1.00	......	9.00	4.00	......	......	....
	The Schaal-Sheldon Fertilizer Co., Erie, Pa.	Found.	1.30	3.45	6.78	6.78	2.23	.45	9.01	3.91	3.91	14.59	383
385	**Raw Bone Phosphate**	Claimed.	2.00	......	9.00	......	1.00	......	10.00	4.00	......	......	....
	The Allegheny City Fert. Wks., Allegheny, Pa.	Found.	2.60	6.89	6.08	6.08	1.53	.31	7.61	4.14	4.14	17.42	385

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† From animal matter.

* From sulphate.

TABLE I.—MIXED FERTILIZERS, WITH POTASH—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found	Ammonia		Phosphoric Acid					Potash		Total Value	Record Number
					Available		Insoluble		Total Percent				
			Percent	Value	Percent	Value	Percent	Value		Percent	Value		
386	**Potato Manure**	Claimed.	3.00	......	8.00	......	2.00	......	10.00	6.00	......	......	....
	The Allegheny City Fert. Wks., Allegheny, Pa.	Found.	2.65	7.02	7.03	7.03	2.05	.41	9.08	4.45	4.45	18.91	386
391	**Tuscarora Chief**	Claimed.	1.00	......	8.00	......	2.00	......	10.00	4.00	......	......	....
	The Tuscarora Fertilizer Co., Chicago, Ill.	Found.	1.30	3.45	8.44	8.44	1.08	.22	9.52	4.66	4.66	16.77	391
392	**Special Vegetable Grower**	Claimed.	1.00	......	9.00	......	1.00	......	10.00	4.00	......	......	....
	The Muskingum Valley Fert. Co., Marietta, O.	Found.	1.20	3.18	8.70	8.70	2.17	.43	10.87	*2.72	3.13	15.44	392
393	**Acidulated Bone Phosphate**	Claimed.	1.00	......	10.00	......	1.00	......	11.00	1.00	......	......	....
	The Muskingum Valley Fert. Co., Marietta, O.	Found.	1.05	2.78	11.13	11.13	1.72	.34	12.85	1.23	1.23	15.48	393
396	**Miami Valley Phosphate**	Claimed.	2.00	......	10.00	......	2.00	......	12.00	2.00	......	......	....
	The Jones Fertilizing Co., Louisville, Ky.	Found.	2.35	6.23	9.21	9.21	1.72	.34	10.93	*1.97	2.27	18.05	396
401	**Buckeye Wheat Grower**	Claimed.	1.00	......	10.00	......	1.00	......	11.00	1.00	......	......	....
	The Toledo Rendering & Fert. Co., Bucyrus, O.	Found.	1.10	2.92	9.21	9.21	1.40	.28	10.61	0.87	.87	13.28	401
403	**Sugar Beet Grower**	Claimed.	3.00	......	8.00	......	3.00	......	11.00	5.00	......	......	....
	Swift & Company, Chicago, Ill.	Found.	3.00	7.95	9.21	9.21	1.21	.24	10.42	*4.88	5.61	23.01	403
405	**Potato and Vegetable Manure**	Claimed.	1.50	......	8.00	......	2.00	......	10.00	6.00	......	......	....
	The Seneca Fertilizer Co., Tiffin, O.	Found.	2.10	5.57	8.25	8.25	†2.49	1.24	10.74	*5.55	6.38	21.44	405
406	**All Crop Special**	Claimed.	1.50	......	10.00	......	1.00	......	11.00	1.50	......	......	....
	The Seneca Fertilizer Co., Tiffin, O.	Found.	1.95	5.17	10.10	10.10	2.23	.45	12.33	*1.62	1.86	17.58	406

408	**Soluble Bone**	Claimed.	1.00	......	7.00	......	1.00	......	8.00	1.00	......	......	....
	The E. Rauh & Sons Fert. Co. Indianapolis, Ind.	Found.	0.85	2.25	8.17	8.17	3.39	.68	11.56	0.98	.98	12.08	408
410	**P. A. P. for Potatoes and Truck**	Claimed.	1.00	......	10.00	......	2.00	......	12.00	1.00	......	......	....
	The Royal Fertilizer Co., Cleveland, O.	Found.	1.00	2.65	10.75	10.75	3.25	.65	14.00	1.12	1.12	15.17	410
411	**Bucyrus Guano**	Claimed.	1.00	......	8.00	......	1.00	......	9.00	4.00	......	......	....
	The Toledo Rendering & Fert. Co., Bucyrus, O.	Found.	0.70	1.86	6.90	6.90	1.28	.26	8.18	3.80	3.80	12.82	411
413	**Big Four Tobacco Grower**	Claimed.	2.00	......	8.00	......	......	......	......	2.00	......	......	....
	The Globe Fertilizer Co., Louisville, Ky.	Found.	1.85	4.90	9.02	9.02	1.08	.22	10.10	*1.83	2.10	16.24	413
414	**Maumee Valley Fertilizer**	Claimed.	5.65	......	11.08	......	5.68	......	16.76	0.44	......	......	....
	N. Rassell & Co., Toledo, O.	Found.	7.55	20.01	11.18	11.18	†2.05	1.02	13.23	0.35	.35	32.56	414
421	**Truckers' Manure**	Claimed.	3.00	......	8.00	......	1.00	......	9.00	6.00	......	......	....
	The Schaal-Sheldon Fertilizer Co., Erie, Pa.	Found.	2.95	7.82	7.23	7.23	1.85	.37	9.08	5.45	5.45	20.87	421
423	**Sure Crop**	Claimed.	1.00	......	9.00	......	1.00	......	10.00	2.00	......	......	....
	The Bowker Fertilizer Co., Cincinnati, O.	Found.	1.05	2.78	9.39	9.39	3.07	.61	12.46	1.97	1.97	14.75	423
425	**German Phosphate**	Claimed.	1.00	......	8.00	......	1.00	......	9.00	3.00	......	......	....
	The Farmers' Fertilizer Co., Indianapolis, Ind.	Found.	1.10	2.92	9.33	9.33	3.90	.78	13.23	*2.75	3.16	16.19	425
428	**Raw Bone and Potash**	Claimed.	2.00	......	16.00	......	......	......	......	3.00	......	......	....
	The Alliance Fertilizer Co., Alliance, O.	Found.	2.50	6.63	10.42	10.42	†7.23	3.61	17.65	3.22	3.22	23.88	428
429	**Button Bone**	Claimed.	2.25	......	10.00	......	2.00	......	13.00	3.00	......	......	....
	The Alliance Fertilizer Co., Alliance, O.	Found.	2.15	5.70	10.55	10.55	1.85	.37	12.40	3.44	3.44	20.06	429
430	**Bone Black Phosphate and Potash**	Claimed.	1.00	......	8.00	......	1.00	......	9.00	2.00	......	......	....
	The Alliance Fertilizer Co., Alliance, O.	Found.	1.15	3.05	7.54	7.54	3.77	.75	11.31	1.66	1.66	13.00	430
436	**Cumberland's Potato Phosphate**	Claimed.	1.00	......	8.00	......	......	......	10.00	4.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.00	2.65	8.51	8.51	2.36	.47	10.87	4.18	4.18	15.81	436
437	**Cumberland's Seeding Down**	Claimed.	1.00	......	7.00	......	......	......	9.00	1.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.40	3.71	8.06	8.06	1.02	.20	9.08	1.25	1.25	13.22	437

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† From animal matter.

* From sulphate.

TABLE I.—MIXED FERTILIZERS, WITH POTASH—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found	Ammonia		Phosphoric Acid					Potash		Total Value	Record Number
					Available		Insoluble		Total Percent				
			Percent	Value	Percent	Value	Percent	Value		Percent	Value		
438	**Pacific's Nobsque Guano**........................	Claimed.	1.25	......	8.00	......	......	......	10.00	2.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.00	2.65	7.29	7.29	2.68	.54	9.97	2.33	2.33	12.81	438
440	**Anti-Trust**	Claimed.	1.00	......	9.00	......	1.00	......	10.00	1.00	......	......	....
	L. Frank & Sons, Zanesville, O..............	Found.	1.10	2.92	9.85	9.85	1.59	.32	11.44	1.18	1.18	14.27	440
441	**Crocker's Harvest Jewel**	Claimed.	2.00	......	8.00	......	......	......	10.00	2.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.80	4.77	9.02	9.02	1.72	.34	10.74	2.10	2.10	16.23	441
442	**Williams & Clark's Corn and Wheat Special** ..	Claimed.	1.00	......	10.00	......	......	......	12.00	1.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.30	3.45	10.42	10.42	2.23	.45	12.65	1.41	1.41	15.73	442
443	**Williams & Clark's Prolific Crop Producer**....	Claimed.	1.00	......	7.00	......	......	......	9.00	1.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.35	3.58	7.61	7.61	1.66	.33	9.27	1.37	1.37	12.89	443
445	**Special Sugar Beet Grower**.....................	Claimed.	1.00	......	8.00	......	1.00	......	9.00	4.00	......	......	....
	The Jarecki Chem. Co., Sandusky & Cin'ti, O.	Found.	0.80	2.12	9.97	9.97	1.28	.26	11.25	3.53	3.53	15.88	445
448	**Ammoniated Food for Flowers**.................	Claimed.	2.00	......	4.00	......	2.00	......	6.00	2.00	......	......	....
	The Bowker Fertilizer Co., Cincinnati, O......	Found.	2.45	6.49	5.52	5.52	3.81	.76	9.33	*2.22	2.55	15.32	448
449	**Corn and Grain**................................	Claimed.	2.00	......	8.00	......	1.00	......	9.00	2.00	......	......	....
	The Scientific Fertilizer Co., Pittsburg, Pa....	Found.	1.30	3.45	5.95	5.95	0.96	.19	6.91	2.06	2.06	11.65	449
450	**Wheat and Clover**.............................	Claimed.	1.00	......	9.00	......	1.00	......	10.00	4.00	......	......	....
	The Scientific Fertilizer Co., Pittsburg, Pa....	Found.	1.55	4.11	6.72	6.72	1.21	.24	7.93	3.80	3.80	14.87	450

451	**Economy**	Claimed.	2.00	......	9.00	......	1.00	......	10.00	4.00	......	......	....
	The Scientific Fertilizer Co., Pittsburg, Pa.	Found.	2.30	6.10	6.39	6.39	1.66	.33	8.05	3.99	3.99	16.81	451
452	**Grain Grower**	Claimed.	1.00	......	8.00	......	1.00	......	9.00	1.00	......	......	....
	The Scientific Fertilizer Co., Pittsburg, Pa.	Found.	1.20	3.18	5.24	5.24	0.83	.17	6.07	1.81	1.81	10.40	452
454	**Big Eight, Ammoniated Acid Phos. & Potash**	Claimed.	1.10	......	9.60	......	3.03	......	12.63	1.04	......	......	....
	Nelson Morris & Co., Chicago, Ill.	Found.	1.05	2.78	11.07	11.07	0.57	.11	11.64	1.74	1.74	15.70	454
458	**Williams & Clark's Royal Bone Phosphate**	Claimed.	1.25	......	8.00	......	......	......	10.00	2.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.15	3.05	8.50	8.50	1.15	.23	9.65	2.30	2.30	14.08	458
460	**Farmers' Union Club and Grange**	Claimed.	1.00	......	7.00	......	......	......	9.00	1.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.25	3.31	6.97	6.97	1.66	.33	8.63	1.23	1.23	11.84	460
463	**Grain and Grass Phosphate**	Claimed.	1.00	......	9.00	......	1.00	......	10.00	4.00	......	......	....
	The Allegheny City Fert. Wks., Allegheny, Pa.	Found.	1.40	3.71	6.65	6.65	1.02	.20	7.67	3.32	3.32	13.88	463
465	**M. E. Wheeler's Royal Wheat Grower**	Claimed.	1.00	......	8.00	......	......	......	10.00	2.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.55	4.11	8.56	8.56	3.64	.73	12.20	2.12	2.12	15.52	465
468	**Iron City**	Claimed.	3.00	......	9.00	......	......	......	10.00	2.00	......	......	....
	The American Reduction Co., Pittsburg, Pa.	Found.	2.70	7.16	7.16	7.16	1.92	.38	9.08	1.66	1.66	16.36	468
469	**Wheat and Grass Manure**	Claimed.	1.00	......	8.00	......	1.00	......	9.00	2.00	......	......	....
	S. M. Hess & Bro., Philadelphia, Pa.	Found.	1.35	3.58	8.95	8.95	2.36	.47	11.31	2.31	2.31	15.31	469
474	**Read's Gold Coin**	Claimed.	2.00	......	8.00	......	......	......	10.00	2.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	2.35	6.23	9.52	9.52	1.92	.38	11.44	2.14	2.14	18.27	474
475	**Read's Leader**	Claimed.	1.00	......	7.00	......	......	......	9.00	1.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.40	3.71	7.03	7.03	2.87	.57	9.90	1.08	1.08	12.39	475
476	**Crocker's New Rival Phosphate**	Claimed.	1.50	......	9.00	......	......	......	11.00	2.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	2.20	5.83	10.36	10.36	1.53	.31	11.89	2.18	2.18	18.68	476
478	**Animal Bone Phosphate**	Claimed.	3.00	......	10.00	......	1.00	......	11.00	3.00	......	......	....
	G. W. Rickard, Medina, Ohio	Found.	3.50	9.28	10.36	10.36	1.28	.26	11.64	3.47	3.47	23.37	478

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† From animal matter.

* From sulphate.

TABLE I.—MIXED FERTILIZERS, WITH POTASH—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found	Ammonia		Phosphoric Acid					Potash		Total Value	Record Number
					Available		Insoluble		Total Percent				
			Percent	Value	Percent	Value	Percent	Value		Percent	Value		
490	**Herrick's Bone and Potash**	Claimed.	2.00	......	8.00	......	2.00	......	10.00	2.00	......	......	....
	The Western Union Chem. Co., Cleveland, O.	Found.	2.05	5.43	8.12	8.12	2.43	.49	10.55	1.99	1.99	16.03	490
491	**Corn and Wheat Grower**	Claimed.	1.00	......	10.00	......	1.00	......	11.00	1.00	......	......	....
	The Buckeye Fertilizer Co., Columbus, O.....	Found.	1.15	3.05	10.19	10.19	1.98	.40	12.17	1.20	1.20	14.84	491
492	**Walker's Excelsior Brand Plant Food**	Claimed.	7.00	......	......	......	......	......	12.00	11.00	......	......	....
	The Flower City Plant Food Co., Roch'ter, N. Y.	Found	5.50	14.58	3.26	3.26	8.63	1.73	11.89	*11.05	12.71	32.28	492
493	**Soluble Bone**	Claimed.	1.25	......	10.00	......	2.00	......	12.00	1.50	......	......	....
	The Currie Fertilizer Co., Louisville, Ky....	Found.	1.65	4.37	11.30	11.30	1.28	.26	12.58	2.06	2.06	17.99	493
494	**Corn and Wheat Grower**	Claimed.	1.00	......	7.00	......	1.00	......	......	1.00	......	......	....
	The Jones Fertilizing Co., Louisville, Ky....	Found.	0.70	1.86	8.03	8.03	0.70	.14	8.73	*1.04	1.21	11.23	494
497	**Dahl's Special**	Claimed.	3.00	......	10.00	......	6.00	......	16.00	2.00	......	......	....
	Dahl & Miller, Washington C. H., O.	Found.	3.75	9.94	11.84	11.84	3.00	.60	14.84	*2.49	2.86	25.24	497
499	**Acme Complete Fertilizer**....................	Claimed.	1.00	......	7.00	......	1.00	......	8.00	1.00	......	......	....
	The Canton Fert. and Chem. Co., Canton, O.	Found.	1.25	3.31	9.65	9.65	0.96	.19	10.61	0.95	.95	14.10	499
500	**Capital Special Club Formula**	Claimed.	1.00	......	12.00	......	1.00	......	13.00	3.00	......	......	....
	The Cincinnati Phosphate Co., Cincinnati, O.	Found.	0.95	2.52	12.73	12.73	3.58	.72	16.31	2.16	2.16	18.13	500
505	**Pure Bone with Potash**	Claimed.	3.00	......	12.00	......	2.00	......	14.00	3.00	......	......	....
	The Pitts. Prov. and Pack. Co., Pittsburg, Pa.	Found.	4.50	11.93	8.50	8.50	†6.27	3.13	14.77	*3.23	3.71	27.27	505

512	**Buckeye**	Claimed.	2.50	......	8.00	......	2.00	......	10.00	3.00	......	......	....
	The Marietta Bone and Phos. Co., Marietta, O.	Found.	1.85	4.90	7.09	7.09	†4.22	2.11	11.31	*3.05	3.51	17.61	512
513	**Corn, Oats and Wheat Grower**	Claimed.	1.50	......	8.00	......	2.00	......	10.00	2.00	......	......	....
	The Marietta Bone and Phos. Co., Marietta, O.	Found.	1.40	3.71	7.73	7.73	3.07	.61	10.80	2.35	2.35	14.40	513
515	**Potato and Truck Special**	Claimed.	3.50	......	8.00	......	2.00	......	10.00	5.00	......	......	....
	The Marietta Bone and Phos. Co., Marietta, O.	Found.	2.55	6.76	10.29	10.29	3.58	.72	13.87	*5.30	6.09	23.86	515
518	**Cumberland's Guano**	Claimed.	1.25	......	8.00	......	......	......	10.00	2.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.15	3.05	7.99	7.99	2.68	.54	10.67	2.10	2.10	13.68	518
522	**Empire**	Claimed.	1.00	......	7.00	......	1.00	......	8.00	1.00	......	......	....
	The Schaal-Sheldon Fertilizer Co., Erie, Pa.	Found.	1.40	3.71	6.65	6.65	3.13	.63	9.78	1.60	1.60	12.59	522
525	**True Balance Grain and Grass Fertilizer**	Claimed.	1.00	......	10.00	......	1.00	......	11.00	1.00	......	......	....
	W. H. Kirk, Wellington, O.	Found.	1.10	2.92	11.39	11.39	2.68	.54	14.07	*1.14	1.31	16.16	525
526	**World of Good Superphosphate**	Claimed.	2.50	......	8.00	......	......	......	10.00	1.50	......	......	....
	The Packers' Fert. Association, Chicago, Ill.	Found.	2.40	6.36	8.50	8.50	2.05	.41	10.55	1.72	1.72	16.99	526
529	**Valley Phosphate**	Claimed.	4.00	......	7.00	......	2.00	......	9.00	1.50	......	......	....
	The J. L. & H. Stadler Rd. & Ft. Co., Cleve., O.	Found.	2.75	7.29	9.26	9.26	0.77	.15	10.03	0.73	.73	17.43	529
531	**Valley Potato Manure**	Claimed.	3.00	......	6.00	......	2.00	......	9.00	5.00	......	......	....
	The J. L. & H. Stadler Rd. & Ft. Co, Cleve., O.	Found.	2.05	5.43	8.06	8.06	1.08	.22	9.14	6.09	6.09	19.80	531
532	**Reese's Challenge Crop Grower**	Claimed.	1.00	......	8.00	......	......	......	10.00	2.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.20	3.18	8.50	8.50	1.15	.23	9.65	2.26	2.26	14.17	532
537	**Zell's Little Giant**	Claimed.	1.00	......	7.00	......	......	......	9.00	1.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.40	3.71	8.88	8.88	3.07	.61	11.95	1.23	1.23	14.43	537
539	**Zell's Ammoniated Bone Superphosphate**	Claimed.	2.00	......	8.00	......	......	......	10.00	2.00	......	......	....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	1.60	4.24	9.22	9.22	2.55	.51	11.77	2.30	2.30	16.27	539
542	**Wheat Grower No. 1**	Claimed.	2.50	......	10.00	......	3.00	......	13.00	3.00	......	......	....
	The Seneca Fertilizer Co., Tiffin, O.	Found.	3.70	9.81	9.21	9.21	†5.56	2.78	14.77	*3.43	3.94	25.74	542

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† From animal matter.

* From sulphate.

TABLE I.—MIXED FERTILIZERS, WITH POTASH—Concluded.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found	Ammonia		Phosphoric Acid					Potash		Total Value	Record Number
					Available		Insoluble		Total Percent				
			Percent	Value	Percent	Value	Percent	Value		Percent	Value		
543	**John's Tax Payer**	Claimed.	1.00	......	8.00	......	1.00	......	9.00	1.00	......	......	....
	The Seneca Fertilizer Co., Tiffin, O.	Found.	1.30	3.45	8.04	8.04	2.05	.41	10.09	*0.62	.71	12.61	543
545	**Meat, Blood and Potash Fertilizer**	Claimed.	1.00	......	5.00	......	2.00	......	7.00	1.00	......	......	....
	John Ruehle, Defiance, Ohio	Found.	1.56	3.60	6.79	6.79	†6.07	3.03	12.86	0.42	.42	13.84	545
552	**Bone and Potash**	Claimed.	2.00	......	......	......	......	......	10.00	2.00	......	......	....
	The Ashland Fertilizer Works, Ashland, O.	Found.	2.50	6.63	5.31	5.31	†6.07	3.03	11.38	*1.02	1.17	16.14	552
553	**Universal Phosphate**	Claimed.	1.00	......	7.00	......	1.00	......	8.00	1.00	......	......	....
	The Farmers' Fertilizer Co., Indianapolis, Ind.	Found.	1.55	4.11	7.45	7.45	1.72	.34	9.17	*0.96	1.10	13.00	553
554	**Corn and Wheat Grower**	Claimed.	1.00	......	8.00	......	1.00	......	9.00	2.00	......	......	....
	The Farmers' Fertilizer Co., Indianapolis, Ind.	Found.	1.00	2.65	9.59	9.59	2.05	.41	11.64	*1.85	2.13	14.78	554
556	**High-Grade Superphosphate of Bone**	Claimed.	1.50	......	9.00	......	2.00	......	11.00	1.50	......	......	....
	D. Blocher & Co., Gettysburg, Pa.	Found.	1.50	3.98	11.25	11.25	1.98	.40	13.23	1.64	1.64	17.27	556

† From animal matter.

* From sulphate.

TABLE II.—MIXED FERTILIZERS, WITHOUT POTASH.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia		Phosphoric Acid					Total Value	Record Number
					Available		Insoluble		Total Percent		
			Percent	Value	Percent	Value	Percent	Value			
53	**Acidulated Bone Meal**	Claimed.	2.00	......	11.00	......	......	......	18.00	......	....
	The Armour Fertilizer Works, Chicago, Ill....	Found.	2.07	5.49	12.62	12.62	7.23	1.45	19.85	19.56	53
111	**Capital Ground Bone**	Claimed.	3.00	......	......	......	......	......	20.00	......	....
	The Cincinnati Phosphate Co., Cincinnati, O..	Found.	2.45	6.49	12.42	12.42	12.40	2.48	24.82	21.39	111
200	**Half and Half**	Claimed.	2.25	......	6.00	......	8.00	......	14.00	......	....
	The Western Union Chem. Co., Cleveland, O.	Found.	2.60	6.89	7.84	7.84	7.08	1.42	14.92	16.15	200
375	**Ground Bone**	Claimed.	3.00	......	......	......	......	......	20.00	......	....
	Michigan Carbon Works, Detroit, Mich......	Found.	3.65	9.67	8.26	8.26	9.14	1.83	17.40	19.76	375
480	**Wheat Special**	Claimed.	0.50	......	12.00	......	......	......	......	......	....
	The I. P. Thomas & Son Co., Phila., Pa.	Found.	0.95	2.52	11.56	11.56	1.02	.20	12.58	14.28	480
481	**Guano Fertilizer**	Claimed.	2.00	......	9.00	......	2.00	......	11.00	......	....
	The Pitts. Prov. and Pack. Co., Pittsburg, Pa.	Found.	1.85	4.90	6.90	6.90	3.90	.78	10.80	12.58	481
521	**Raw and Acidulated Bone**	Claimed.	2.00	......	......	......	......	......	20.00	......	....
	The I. P. Thomas & Son Co., Phila., Pa.	Found.	2.55	6.76	10.11	10.11	9.46	1.89	19.57	18.76	521
523	**Capital Humus Phosphate**	Claimed.	0.50	......	14.00	......	1.00	......	15.00	......	....
	The Cincinnati Phosphate Co., Cincinnati, O.	Found.	0.70	1.86	12.22	12.22	1.21	.24	13.43	14.32	523
524	**Phosphate with Humus**	Claimed.	0.50	......	14.00	......	1.00	......	15.00	......	....
	The Packers' Fertilizer Co., Cincinnati, O.....	Found.	0.75	1.99	12.28	12.28	1.34	.27	13.62	14.54	524

TABLE II.—MIXED FERTILIZERS, WITHOUT POTASH—Concluded.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia		Phosphoric Acid					Total Value	Record Nnmber
					Available		Insoluble		Total Percent		
			Percent	Value	Percent	Value	Percent	Value			
530	**Bone and Meat Fertilizer**	Claimed.	2.75	....	7.09	....	3.84	....	10.93	....	....
	The J. L. & H. Stadler Rd. & Ft. Co., Cleve'd, O.	Found.	2.05	5.43	6.78	6.78	0.64	.13	7.42	12.34	530
550	**Bone and Phosphate**	Claimed.	1.50	....	....	....	....	....	16.00	....	....
	The Belmont Phosphate Co., Colerain, O. ...	Found.	1.85	4.90	13.05	13.05	7.61	1.52	20.66	19.47	550
551	**Acidulated Bone**	Claimed.	2.00	....	12.00	....	....	....	....	....	....
	George A. Bell, Wheelersburg, O	Found.	2.95	7.82	10.75	10.75	2.94	.59	13.69	19.16	551

TABLE III.—DISSOLVED BONE.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia		Phosphoric Acid					Total Value	Record Number
					Available		Insoluble		Total Percent		
			Percent	Value	Percent	Value	Percent	Value			
50	**Bone and Meat**........................	Claimed.	4.00	....	....	....	....	....	16.00	....	....
	Walker, Stratman & Co., Pittsburg, Pa........	Found.	4.90	12.99	7.95	7.95	†7.01	3.50	14.96	24.44	50
61	**A Ground Bone**........................	Claimed.	1.50	....	....	....	....	....	25.00	....	....
	The Amer. Agri. Chem. Co., New York, N. Y..	Found.	1.80	4.77	16.32	16.32	†10.93	5.46	27.25	26.55	61
329	**Ground Bone**	Claimed.	3.00	....	....	....	....	....	20.00	....	....
	The Amer. Agri. Chem. Co., New York, N. Y..	Found.	3.10	8.22	10.56	10.56	†10.29	5.14	20.85	23.92	329
331	**Chicago Bone Meal**........................	Claimed.	1.50	....	....	....	....	....	25.00	....	....
	Packers' Fertilizer Association, Chicago, Ill....	Found.	1.90	5.04	15.78	15.78	†10.74	5.37	26.52	26.19	331
359	**Ground Bone**	Claimed.	3.00	....	....	....	....	....	20.00	....	....
	The Jarecki Chem. Co., Sandusky and Cin., O.	Found.	2.30	6.10	12.54	12.54	†12.92	6.46	25.46	25.10	359
415	**Pure Ground Bone**........................	Claimed.	5.10	....	12.64	....	10.77	....	23.41	....	....
	Nicholas, Rassel & Co., Toledo, O...........	Found.	3.10	8.22	15.29	15.29	†9.46	4.73	24.75	28.24	415
424	**Bone Meal and Blood**........................	Claimed.	4.50	....	....	....	....	....	23.00	....	....
	Swift & Company, Chicago, Ill...............	Found.	3.85	10.20	14.14	14.14	†9.59	4.79	23.73	29.13	424
439	**Pure Ground Bone**........................	Claimed.	3.00	....	....	....	....	....	20.00	....	....
	The Northwestern Fertilizing Co., Chicago, Ill.	Found.	2.95	7.82	10.81	10.81	†10.87	5.43	21.68	24.06	439
473	**Butchers' Bone Meal**........................	Claimed.	4.00	....	....	....	....	....	16.00	....	....
	The Allegheny City Fert. Wks., Allegheny, Pa.	Found.	3.90	10.34	7.67	7.67	†6.72	3.36	14.39	21.37	473

TABLE III—Dissolved Bone—Concluded.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia		Phosphoric Acid					Total Value	Record Nnmber.
					Available		Insoluble		Total Percent		
			Percent	Value	Percent	Value	Percent	Value			
504	**Crescent Butchers' Ground Bone**	Claimed.	3.00	....	....	....	16.00	....	16.00	....	....
	The Pittsburg Prov. & Pack. Co., Pittsburg, Pa.	Found.	3.50	9.28	10.29	10.29	†3.71	1.85	14.00	21.42	504
527	**Akron Bone Meal**	Claimed.	2.50	....	19.00	....	2.00	....	21.00	....	....
	The Akron Fertilizer Co., Akron, O.	Found.	3.10	8.22	10.81	10.81	†9.72	4.86	20.53	23.89	527
536	**Bone and Blood Fertilizer**	Claimed.	4.40	....	....	....	....	....	17.78	....	....
	Geo. Rupp & Co., Hamilton, O.	Found.	5.35	14.18	8.77	8.77	†9.14	4.57	17.91	27.52	536
541	**Acidulated Pure Bone**	Claimed.	3.00	....	....	....	....	....	20.00	....	....
	The Seneca Fertilizer Co., Tiffin, O.	Found.	4.50	11.93	11.39	11.39	†9.46	4.73	20.85	28.05	541
547	**Pure Ground Bone**	Claimed.	3.00	....	....	....	....	....	20.00	....	....
	The Critchfield Co., Cincinnati, O.	Found.	3.50	9.28	14.08	14.08	†10.23	5.11	24.31	28.47	547

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† From animal matter.

TABLE IV.—ROCK PHOSPHATE.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid				Total Value	Record Number
			Available		Insoluble			
			Percent	Value	Percent	Total Percent		
8	**Superior Phosphate**	Claimed.	10.00	....	....	11.00	....	....
	The Ohio Farmers' Fertilizer Co., Columbus, Ohio	Found.	11.28	11.28	2.36	13.64	11.28	8
10	**Alkaline Bone**	Claimed.	14.00	....	....	15.00	....	....
	The Ohio Farmers' Fertilizer Co., Columbus, Ohio	Found.	14.97	14.97	2.56	17.53	14.97	10
12	**Dissolved Bone**	Claimed.	10.00	....	2.00	12.00	....	....
	The Bowker Fertilizer Co., Cincinnati, Ohio	Found.	9.91	9.91	3.39	13.30	9.91	12
16	**Extra Superphosphate**	Claimed.	14.00	....	2.00	16.00	....	....
	The Buckeye Fertilizer Co., Columbus, Ohio	Found.	13.69	13.69	2.74	16.43	13.69	16
19	**Soluble Bone**	Claimed.	14.00	....	1.00	15.00	....	....
	The Buffalo Fertilizer Co., Buffalo, N. Y.	Found.	14.33	14.33	5.12	19.45	14.33	19
25	**Tennessee Phosphate**	Claimed.	10.00	....	....	11.00	....	....
	The Abbott & Martin Rendering Co., Columbus, O.	Found.	10.05	10.05	3.00	13.05	10.05	25
28	**Hercules Phosphate**	Claimed.	14.00	....	....	15.00	....	....
	The Abbott & Martin Rendering Co., Columbus, O.	Found.	14.26	14.26	1.59	15.85	14.26	28
31	**Bradley's Acid Phosphate**	Claimed.	10.00	....	....	12.00	....	....
	The American Agricultural Chemical Co., New York, N. Y.	Found.	11.45	11.45	2.11	13.56	11.45	31
34	**Crocker's Dissolved Bone**	Claimed.	14.00	....	....	16.00	....	....
	The American Agricultural Chemical Co., New York, N. Y.	Found.	14.33	14.33	1.02	15.35	14.33	34

TABLE IV.—ROCK PHOSPHATE—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid				Total Value	Record Number
			Available		Insoluble	Total Percent		
			Percent	Value	Percent			
36	**Great Eastern's Dissolved Bone**	Claimed.	14.00	....	....	16.00	....	.....
	The American Agricultural Chemical Co., New York, N. Y.	Found.	14.51	14.51	3.46	17.97	14.51	36
57	**Star Phosphate**	Claimed.	14.00	....	2.00	16.00	....	.....
	The Armour Fertilizer Works, Chicago, Ill.	Found.	15.14	15.14	1.32	16.46	15.14	57
58	**Cereal Phosphate**	Claimed.	10.00	....	3.00	13.00	....	.....
	The Armour Fertilizer Works, Chicago, Ill.	Found.	11.56	11.56	2.15	13.71	11.56	58
63	**Detrick's Monarch Phosphate**	Claimed.	10.00	....	....	12.00	....	.....
	The American Agricultural Chemical Co., New York, N. Y.	Found.	10.22	10.22	2.49	12.71	10.22	63
68	**Pacific's Acid Phosphate**	Claimed.	10.00	....	....	12.00	....	.....
	The American Agricultural Chemical Co., New York, N. Y.	Found.	10.16	10.16	2.11	12.27	10.16	68
70	**Packers' Union Acidulated Bone**	Claimed	14.00	....	....	16.00	....	.....
	The American Agricultural Chemical Co., New York, N. Y.	Found.	14.98	14.98	2.17	17.15	14.98	70
72	**M. E. Wheeler's Electrical Dissolved Bone**	Claimed.	14.00	....	....	16.00	....	.....
	The American Agricultural Chemical Co., New York, N. Y.	Found.	14.26	14.26	2.81	17.07	14.26	72
73	**M. E. Wheeler's Wisdom's Choice**	Claimed.	10.00	....	....	12.00	....	.....
	The American Agricultural Chemical Co., New York, N. Y.	Found.	10.93	10.93	3.71	14.64	10.93	73
75	**Soluble Phosphate**	Claimed.	10.00	....	....	11.00	....	.....
	The Western Chemical Co., Chicago, Ill.	Found.	11.62	11.62	2.56	14.18	11.62	75

77	**Dissolved Bone**	Claimed.	14.00	....	....	15.00	....	.....
	The Western Chemical Co. Chicago, Ill.	Found.	14.89	14.89	1.53	16.42	14.89	77
79	**Acid Phosphate**	Claimed.	12.00	....	1.00	13.00	....	.....
	The Packers' Fertilizer Co., Cincinnati, O.	Found.	12.35	12.35	2.87	15.22	12.35	79
81	**Helpmate**	Claimed.	12.00	....	1.00	13.00	....	.....
	Walker, Stratman & Co., Pittsburg, Pa.	Found.	10.37	10.37	1.40	11.77	10.37	81
85	**Cleveland Dryer's XXX Phosphate**	Claimed.	14.00	....	....	16.00	....	.....
	The American Agricultural Chemical Co., New York, N. Y.	Found.	14.33	14.33	1.59	15.92	14.33	85
88	**Standard's Dissolved Bone**	Claimed.	14.00	....	....	16.00	....	.....
	The American Agricultural Chemical Co., New York, N. Y.	Found.	13.11	13.11	1.66	14.77	13.11	88
89	**Standard's Acid Phosphate**	Claimed.	10.00	....	....	12.00	....	.....
	The American Agricultural Chemical Co., New York, N. Y.	Found.	11.08	11.08	2.05	13.13	11.08	89
91	**M. E. Wheeler's Unammoniated Wheat Grower**	Claimed.	12.00	....	....	14.00	....	.....
	The American Agricultural Chemical Co., New York, N. Y.	Found.	12.15	12.15	3.58	15.73	12.15	91
104	**Standard Phosphate**	Claimed.	14.00	....	1.00	15.00	....	.....
	The Critchfield Co., Cincinnati, O.	Found.	14.27	14.27	2.00	16.27	14.27	104
114	**Dissolved Bone**	Claimed.	15.00	....	....	....	....	.....
	Geo. A. Bell, Wheelersburg, O.	Found.	15.61	15.61	1.72	17.33	15.61	114
117	**Peerless Dissolved Bone**	Claimed.	12.00	....	1.00	13.00	....	.....
	The Canton Fertilizer and Chemical Co., Canton, O.	Found.	13.92	13.92	1.28	15.20	13.92	117
118	**Acid Phosphate**	Claimed.	8.00	....	1.00	9.00	....	.....
	The Canton Fertilizer and Chemical Co., Canton, O.	Found.	10.05	10.05	1.15	11.20	10.05	118
129	**High Grade Wheat and Grass Grower**	Claimed.	14.00	....	1.00	15.00	....	.....
	The Queen City Fertilizer Co., Cincinnati, O.	Found.	14.45	14.45	2.11	16.56	14.45	129
131	**Quick Acting Phosphate**	Claimed.	10.00	....	....	12.00	....	.....
	The Northwestern Fertilizer Co., Chicago, Ill.	Found.	10.30	10.30	3.96	14.26	10.30	131

TABLE IV.—Rock Phosphate—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid				Total Value	Record Number
			Available		Insoluble	Total Percent		
			Percent	Value	Percent			
132	**Soluble Dissolved Bone**	Claimed	14.00	....	....	16.00	....	.....
	The Northwestern Fertilizing Co., Chicago, Ill........	Found.	14.15	14.15	3.25	17.40	14.15	132
136	**Soluble Bone**	Claimed.	14.00	....	1.00	15.00	....	.....
	The Bowker Fertilizer Co., Cincinnati, Ohio	Found.	14.07	14.07	3.07	17.14	14.07	136
138	**Bradley's Dissolved Bone, Justice Brand**	Claimed.	12.00	....	....	14.00	....	.....
	The American Agricultural Chemical Co., New York, N. Y.	Found.	12.03	12.03	2.17	14.20	12.03	138
139	**Bradley's Soluble Dissolved Bone**	Claimed.	14.00	....	....	16.00	....	.....
	The American Agricultural Chemical Co., New York, N. Y.	Found	13.82	13.82	2.17	15.99	13.82	139
141	**Cleveland Dryer's Horsehead Phosphate**	Claimed.	10.00	....	....	12.00	....	.....
	The American Agricultural Chemical Co., New York, N. Y.	Found.	10.88	10.88	2.17	13.05	10.88	141
145	**Crocker's Erie Fertilizer**	Claimed.	12.00	....	....	14.00	....	.....
	The American Agricultural Chemical Co., New York, N. Y.	Found.	11.52	11.52	3.96	15.48	11.52	145
146	**Crocker's Economical Phosphate**	Claimed.	10.00	....	....	12.00	....	.....
	The American Agricultural Chemical Co., New York, N. Y.	Found.	9.65	9.65	4.16	13.81	9.65	146
149	**Milsom's Dissolved Bone**	Claimed.	12.00	....	....	14.00	....	.....
	The American Agricultural Chemical Co., New York, N. Y.	Found.	12.66	12.66	3.84	16.50	12.66	149
152	**Pacific's Dissolved Bone Phosphate of Lime**	Claimed.	14.00	....	....	16.00	....	....
	The American Agricultural Chemical Co., New York, N. Y.	Found.	14.91	14.91	2.36	17.27	14.91	152

157	**Zell's Dissolved Bone**	Claimed.	14.00	....	....	16.00	....	.....
	The American Agricultural Chemical Co., New York, N. Y.	Found.	13.56	13.56	1.92	15.48	13.56	157
161	**Economy**	Claimed.	10.00	....	1.00	11.00	....	.....
	The M. Hamm Co., Washington C. H., O.	Found.	9.97	9.97	3.52	13.49	9.97	161
187	**Security Phosphate**	Claimed.	14.00	....	....	15.00	....	.....
	The Hardy Packing Co., Chicago, Ill.	Found.	14.38	14.38	1.72	16.10	14.38	187
190	**C. O. D. Phosphate**	Claimed.	14.00	....	1.00	15.00	....	.....
	The Jarecki Chemical Co., Sandusky and Cincinnati, O.	Found.	14.72	14.72	1.46	16.18	14.72	190
193	**St. Bernard Phosphate**	Claimed.	12.00	....	1.00	13.00	....	.....
	The Jarecki Chemical Co., Sandusky and Cincinnati, O.	Found.	12.15	12.15	2.11	14.26	12.15	193
194	**Ideal Phosphate**	Claimed.	10.00	....	1.00	11.00	....	.....
	The E. Rauh & Sons Fertilizer Co., Indianapolis, Ind.	Found.	11.15	11.15	1.85	13.00	11.15	194
195	**Red Star Phosphate**	Claimed.	14.00	....	1.00	15.00	....	.....
	The E. Rauh & Sons Fertilizer Co., Indianapolis, Ind.	Found.	14.77	14.77	2.05	16.82	14.77	195
201	**International Phosphate**	Claimed.	14.00	....	2.00	16.00	....	.....
	The Western Union Chemical Co., Cleveland, O.	Found.	14.00	14.00	3.07	17.07	14.00	201
202	**Bull Dog Phosphate**	Claimed.	10.00	....	2.00	12.00	....	.....
	The Western Union Chemical Co., Cleveland, O.	Found.	9.77	9.77	2.43	12.20	9.77	202
209	**Quinnipiac's Plain Superphosphate**	Claimed.	10.00	....	....	12.00	....	.....
	The American Agricultural Chemical Co., New York, N. Y.	Found.	9.79	9.79	3.13	12.92	9.79	209
210	**Garden City Phosphate**	Claimed.	14.00	....	1.00	15.00	....	.....
	Swift & Company, Chicago, Ill.	Found.	15.42	15.42	0.70	16.12	15.42	210
221	**Acid Phosphate**	Claimed.	12.00	....	1.00	13.00	....	.....
	S. M. Hess & Bro., Philadelphia, Pa.	Found.	9.33	9.33	2.68	12.01	9.33	221
223	**Dissolved Bone**	Claimed.	16.00	....	1.00	17.00	....	.....
	The M. Hamm Co., Washington C. H., Ohio.	Found.	17.85	17.85	2.11	19.96	17.85	223

TABLE IV.—ROCK PHOSPHATE—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid				Total Value	Record Number
			Available		Insoluble			
			Percent	Value	Percent	Total Percent		
227	**High Grade Acid Phosphate**	Claimed.	14.00					
	Darling & Company, Chicago, Ill.	Found.	14.90	14.90	0.19	15.09	14.90	227
231	**Great Eastern's Columbus Special**	Claimed.	10.00			12.00		
	The American Agricultural Chemical Co., New York, N. Y.	Found.	10.23	10.23	3.77	14.00	10.23	231
235	**No. 1 Acid Phosphate**	Claimed.	10.00			11.00		
	The Chicago Fertilizer Co., Chicago, Ill.	Found.	11.54	11.54	2.87	14.41	11.54	235
244	**Dissolved Bone Black, Wheat Special**	Claimed.	15.00		1.00	16.00		
	The Jarecki Chemical Co., Sandusky and Cincinnati, O.	Found.	15.35	15.35	2.11	17.46	15.35	244
252	**Great Eastern's Unammoniated Wheat Special**	Claimed.	12.00			14.00		
	The American Agricultural Chemical Co., New York, N. Y.	Found.	13.82	13.82	2.87	16.69	13.82	252
254	**Packers' Union Banner Wheat Grower**	Claimed.	10.00			12.00		
	The American Agricultural Chemical Co., New York, N. Y.	Found.	10.49	10.49	3.13	13.62	10.49	254
255	**Zell's T. and P. Superphosphate**	Claimed.	14.00			16.00		
	The American Agricultural Chemical Co., New York, N. Y.	Found.	14.83	14.83	0.90	15.73	14.83	255
261	**Acid Phosphate**	Claimed.	14.00		1.00	15.00		
	The Fox Chemical Co., Louisville, Ky.	Found.	13.62	13.62	1.02	14.64	13.62	261
262	**Diamond S Phosphate**	Claimed.	10.00		1.00	11.00		
	Swift & Company, Chicago, Ill.	Found.	10.87	10.87	0.70	11.57	10.87	262

267	**Dissolved Phosphate**	Claimed.	10.00	....	1.00	11.00	....	.....
	The I. P. Thomas & Son Co., Philadelphia, Pa.	Found.	9.34	9.34	1.72	11.06	9.34	267
269	**Akron Grain and Grass Grower**	Claimed.	16.00	....	1.50	17.50	....	.....
	The Akron Fertilizer Co., Akron, O.	Found.	15.80	15.80	2.11	17.91	15.80	269
276	**Capital Wheat Grower**	Claimed.	14.00	....	1.00	15.00	....	.....
	The Cincinnati Phosphate Co., Cincinnati, O.	Found.	14.46	14.46	1.72	16.18	14.46	276
277	**Bone Phosphate**	Claimed.	10.00	....	3.00	13.00	....	.....
	The Tuscarora Fertilizer Co., Chicago, Ill.	Found.	12.97	12.97	0.26	13.23	12.97	277
281	**Enterprise**	Claimed.	16.00	....	1.00	17.00	....	.....
	L. Frank & Sons, Zanesville, O.	Found.	16.72	16.72	1.53	18.25	16.72	281
284	**Diamond Phosphate**	Claimed.	14.00	....	....	15.00	....	.....
	The Chicago Fertilizer Co., Chicago, Ill.	Found.	14.20	14.20	5.05	19.25	14.20	284
288	**Soluble Bone**	Claimed.	14.00	....	1.00	15.00	....	.....
	S. M. Hess & Bro., Philadelphia, Pa.	Found.	14.26	14.26	0.96	15.22	14.26	288
291	**Acid Phosphate**	Claimed.	14.00	....	2.00	16.00	....	.....
	The Tuscarora Fertilizer Co., Chicago, Ill.	Found.	15.29	15.29	0.19	15.48	15.29	291
304	**Clark's Cove Atlas Bone Phosphate**	Claimed.	14.00	....	....	16.00	....	.....
	The American Agricultural Chemical Co., New York, N. Y.	Found.	14.77	14.77	1.66	16.43	14.77	304
305	**Clark's Cove Sovereign Acid Phosphate**	Claimed.	10.00	....	....	12.00	....	.....
	The American Agricultural Chemical Co., New York, N. Y.	Found.	10.54	10.54	2.11	12.65	10.54	305
311	**A. A. Acid Phosphate**	Claimed.	10.00	....	....	....	....	.....
	The Fox Chemical Co., Louisville, Ky.	Found.	9.77	9.77	0.90	10.67	9.77	311
312	**Acid Phosphate**	Claimed.	14.00	....	1.00	15.00	....	.....
	The Rasin-Monumental Co., Baltimore, Md.	Found.	15.10	15.10	1.08	16.18	15.10	312
316	**Red Line Phosphate**	Claimed.	14.00	....	....	16.00	....	.....
	Michigan Carbon Works, Detroit, Mich.	Found.	14.84	14.84	1.08	15.92	14.84	316

TABLE IV.—ROCK PHOSPHATE—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid				Total Value	Record Number
			Available		Insoluble	Total Percent		
			Percent	Value	Percent			
317	**Wolverine Phosphate**	Claimed.	10.00	....	....	12.00	....	.....
	Michigan Carbon Works, Detroit, Mich.	Found.	10.35	10.35	2.11	12.46	10.35	317
320	**Detrick's Soluble Bone**	Claimed.	14.00	....	....	16.00	....	.....
	The American Agricultural Chemical Co., New York, N. Y.	Found.	14.40	14.40	2.03	16.43	14.40	320
324	**Soluble Phosphate**	Claimed.	10.00	....	....	12.00	....	.....
	Packers' Fertilizer Association, Chicago, Ill.	Found.	11.50	11.50	1.02	12.52	11.50	324
327	**Fort Dearborn Phosphate**	Claimed.	10.00	....	....	11.00	....	.....
	The Hardy Packing Co., Chicago, Ill.	Found.	9.64	9.64	2.49	12.13	9.64	327
332	**Alliance Phosphate**	Claimed.	10.00	....	2.00	12.00	....	.....
	The Royal Fertilizer Co., Cleveland, O.	Found.	10.54	10.54	1.66	12.20	10.54	332
340	**Capital Superphosphate**	Claimed.	12.00	....	1.00	13.00	....	.....
	The Cincinnati Phosphate Co., Cincinnati, O.	Found.	13.82	13.82	1.66	15.48	13.82	340
341	**Farmers' Union Dissolved Bone**	Claimed.	14.00	....	....	16.00	....	.....
	The American Agricultural Chemical Co., New York, N. Y.	Found.	15.67	15.67	0.64	16.31	15.67	341
346	**Ox Phosphate**	Claimed.	12.00	....	1.00	13.00	....	.....
	The Tennessee Chemical Co., Nashville, Tenn.	Found.	12.35	12.35	1.08	13.43	12.35	346
347	**Soluble Bone**	Claimed.	14.00	....	1.00	15.00	....	.....
	The M. Hamm Co., Washington C. H., O.	Found.	14.26	14.26	5.50	19.76	14.26	347

350	**Tip Top Superphosphate**	Claimed.	15.00	....	1.00	16.00	....	.....
	George W. Mace, Greenville, O.	Found.	16.00	16.00	1.02	17.02	16.00	350
363	**Pure Acid Phosphate**	Claimed.	16.00	....	2.00	18.00	....	.....
	The Ohio Bone and Phosphate Co., Orrville, O.	Found.	15.03	15.03	0.96	15.99	15.03	363
368	**Acid Phosphate**	Claimed.	14.00	....	2.00	16.00	....	.....
	The Central Ohio Fertilizer Co., Mt. Vernon, O.	Found.	13.75	13.75	3.35	17.10	13.75	368
372	**Williams & Clark's Acorn Phosphate**	Claimed.	14.00	....	....	16.00	....	.....
	The American Agricultural Chemical Co., New York, N. Y.	Found.	15.29	15.29	1.53	16.82	15.29	372
378	**Acid Phosphate**	Claimed.	14.00	....	1.00	15.00	....	.....
	The Globe Fertilizer Co., Louisville, Ky.	Found.	15.35	15.35	0.96	16.31	15.35	378
384	**Acid Phosphate**	Claimed.	12.00	....	....	14.00	....	.....
	Michigan Carbon Works, Detroit, Mich.	Found.	12.09	12.09	1.53	13.62	12.09	384
388	**Read's Dissolved Bone**	Claimed.	12.00	....	....	14.00	....	.....
	The American Agricultural Chemical Co., New York, N. Y.	Found.	12.54	12.54	1.40	13.94	12.54	388
389	**Superphosphate**	Claimed.	10.00	....	....	....	....	.....
	The Buckeye Fertilizer Co., Columbus, O.	Found.	11.06	11.06	3.52	14.58	11.06	389
394	**Acid Phosphate**	Claimed.	12.00	....	1.00	13.00	....	.....
	The Muskingum Valley Fertilizer Co., Marietta, O.	Found.	10.30	10.30	2.49	12.79	10.30	394
395	**Electric**	Claimed.	10.00	....	1.00	11.00	....	.....
	L. Frank & Sons, Zanesville, O.	Found.	11.62	11.62	0.90	12.52	11.62	395
404	**Banner Dissolved Bone**	Claimed.	....	....	....	30.00	....	.....
	Michigan Carbon Works, Detroit, Mich.	Found.	32.04	32.04	0.96	33.00	32.04	404
407	**High Grade Phosphate**	Claimed.	16.00	....	1.00	17.00	....	.....
	The Seneca Fertilizer Co., Tiffin, O.	Found.	17.21	17.21	1.21	18.42	17.21	407
422	**Dissolved Bone**	Claimed.	14.00	....	....	15.00	....	.....
	The Schaal-Sheldon Fertilizer Co., Erie, Pa.	Found.	13.76	13.76	2.49	16.25	13.76	422

TABLE IV.—ROCK PHOSPHATE—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid				Total Value	Record Number
			Available		Insoluble	Total Percent		
			Percent	Value	Percent			
433	**Full Value Phosphate**	Claimed.	12.00		1.00	13.00		
	The Allegheny City Fertilizer Works, Allegheny, Pa.	Found.	10.28	10.28	2.05	12.33	10.28	433
435	**Acid Phosphate**	Claimed.	14.00		1.00	15.00		
	Walker, Stratman & Co., Pittsburg, Pa.	Found.	12.74	12.74	1.59	14.33	12.74	435
444	**Williams & Clark's Dissolved Bone**	Claimed.	10.00			12.00		
	The American Agricultural Chemical Co., New York, N. Y.	Found.	9.33	9.33	2.68	12.01	9.33	444
446	**Milsom's Acid Phosphate**	Claimed.	14.00			16.00		
	The American Agricultural Chemical Co., New York, N. Y.	Found.	15.35	15.35	1.02	16.37	15.35	446
447	**Big Seven, High Grade Acid Phosphate**	Claimed.	9.67		0.57	10.24		
	Nelson Morris & Co., Chicago, Ill.	Found.	10.55	10.55	0.38	10.93	10.55	447
457	**Acid Phosphate**	Claimed.	10.00					
	Darling & Company, Chicago, Ill.	Found.	10.74	10.74	0.64	11.38	10.74	457
459	**Soluble Dissolved Bone**	Claimed.	14.00			16.00		
	Packers' Fertilizer Association, Chicago, Ill.	Found.	14.13	14.13	1.79	15.92	14.13	459
461	**Quinnipiac's Soluble Dissolved Bone**	Claimed.	14.00			16.00		
	The American Agricultural Chemical Co., New York, N. Y.	Found.	14.83	14.83	0.96	15.79	14.83	461
462	**Acidulated Bone**	Claimed.	14.00		1.00	15.00		
	The Packers' Fertilizer Co., Cincinnati, O.	Found.	14.26	14.26	1.66	15.92	14.26	462

464	**High Grade Acid Phosphate**	Claimed.	16.00	....	1.00	17.00	....	.....
	The Globe Fertilizer Co., Louisville, Ky.	Found.	15.80	15.80	0.57	16.37	15.80	464
466	**A. A. Acid Phosphate**	Claimed.	10.00	....	1.00	11.00	....	.....
	The Globe Fertilizer Co., Louisville, Ky.	Found.	10.93	10.93	1.34	12.27	10.93	466
472	**Farmers' Friend Phosphate**	Claimed.	13.25	....	1.00	14.00	....	.....
	The Alliance Fertilizer Co., Alliance, O.	Found.	13.24	13.24	2.68	15.92	13.24	472
479	**Dissolved Bone Phosphate**	Claimed.	16.00	....	1.00	17.00	....	.....
	G. W. Rickard, Medina, O.	Found.	16.95	16.95	1.53	18.48	16.95	479
487	**S. C. Phosphate**	Claimed.	14.00	....	2.00	16.00	....	.....
	The I. P. Thomas & Son Co., Philadelphia, Pa.	Found.	15.15	15.15	0.13	15.28	15.15	487
495	**Ox High Grade Dissolved Bone**	Claimed.	14.00	....	1.00	15.00	....	.....
	The Tennessee Chemical Co., Nashville, Tenn.	Found.	15.41	15.41	0.96	16.37	15.41	495
498	**Soluble Dissolved Bone**	Claimed.	16.00	....	1.00	17.00	....	.....
	Dahl & Miller, Washington C. H., O.	Found.	16.51	16.51	1.66	18.17	16.51	498
502	**Wheat and Oats Special**	Claimed.	14.00	....	1.00	15.00	....	.....
	The Farmers' Fertilizer Co., Indianapolis, Ind.	Found.	15.01	15.01	0.77	15.78	15.01	502
506	**Niagara's Queen City Phosphate**	Claimed.	12.00	....	....	14.00	....	.....
	The American Agricultural Chemical Co., New York, N. Y.	Found.	11.51	11.51	1.92	13.43	11.51	506
509	**High Grade Acid Phosphate**	Claimed.	16.00	....	1.00	17.00	....	.....
	The Fox Chemical Co., Louisville, Ky.	Found.	15.99	15.99	0.19	16.18	15.99	509
514	**Acid Phosphate**	Claimed.	12.00	....	2.00	14.00	....	.....
	The Marietta Bone and Phosphate Co., Marietta, O.	Found.	8.70	8.70	2.49	11.19	8.70	514
519	**Cumberland's Dissolved Bone**	Claimed.	14.00	....	....	16.00	....	.....
	The American Agricultural Chemical Co., New York, N. Y.	Found.	14.84	14.84	1.53	16.37	14.84	519
533	**Economy Phosphate**	Claimed.	10.00	....	1.00	11.00	....	.....
	G. W. Rickard, Medina, O.	Found.	11.14	11.14	2.23	13.37	11.14	533

TABLE IV.—ROCK PHOSPHATE—Concluded.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid				Total Value	Record Number
			Available		Insoluble			
			Percent	Value	Percent	Total Percent		
535	**Special Wheat Grower**	Claimed.	9.00		1.00	10.00		
	The Queen City Fertilizer Co., Cincinnati, O.	Found.	10.61	10.61	1.72	12.33	10.61	535
538	**Reese's Elm Phosphate**	Claimed.	14.00			16.00		
	The American Agricultural Chemical Co., New York, N. Y.	Found.	14.77	14.77	3.84	18.61	14.77	538
540	**Reese's Dissolved Phosphate of Lime**	Claimed.	10.00			12.00		
	The American Agricultural Chemical Co., New York, N. Y.	Found.	11.25	11.25	5.18	16.43	11.25	540
548	**Eureka Phosphate**	Claimed.	10.00		1.00	11.00		
	The Farmers' Fertilizer Co., Indianapolis, Ind.	Found.	12.15	12.15	0.96	13.11	12.15	548
555	**Dissolved Bone**	Claimed.	14.00		1.00	15.00		
	The Toledo Rendering and Fertilizer Co., Bucyrus, O.	Found.	14.17	14.17	2.01	16.18	14.17	555
557	**Acid Phosphate**	Claimed.	14.00					
	The Kaufman Fertilizer Co., Indianapolis, Ind.	Found.	11.44	11.44	1.02	12.46	11.44	557

TABLE V.—ROCK PHOSPHATE AND POTASH.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid				Potash		Total Value	Record Number
			Available		Insoluble	Total Percent				
			Percent	Value	Percent		Percent	Value		
7	**Dissolved Bone with Potash**	Claimed.	12.00		1.00	13.00	2.00			
	The M. Hamm Co., Washington C. H., O.	Found.	13.76	13.76	2.87	16.63	*2.08	2.39	16.15	7
11	**Dissolved Bone with Potash**	Claimed.	10.00		2.00	12.00	2.00			
	The Bowker Fertilizer Co., Cincinnati, O.	Found.	9.60	9.60	3.25	12.85	2.12	2.12	11.72	11
20	**General Crop**	Claimed.	9.00		1.00	10.00	3.00			
	The Buffalo Fertilizer Co., Buffalo, N. Y.	Found.	11.82	11.82	1.72	13.54	*2.60	2.99	14.81	20
23	**Bone and Potash**	Claimed.	10.00		2.00	12.00	2.00			
	The Tuscarora Fertilizer Co., Chicago, Ill.	Found.	11.38	11.38	0.19	11.57	2.16	2.16	13.54	23
26	**Star Phosphate**	Claimed.	11.00			12.00	1.00			
	The Abbott & Martin Rendering Co., Col., O.	Found.	11.00	11.00	3.71	14.71	1.23	1.23	12.23	26
33	**Crocker's Dissolved Bone and Potash**	Claimed.	10.00			12.00	2.00			
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	10.29	10.29	2.17	12.46	1.62	1.62	11.91	33
38	**Bone and Potash**	Claimed.	10.00			12.00	2.00			
	The Northwestern Fertilizing Co., Chicago, Ill.	Found.	9.20	9.20	2.81	12.01	1.93	1.93	11.13	38
44	**Potash Fertilizer**	Claimed.	10.00		1.00	11.00	5.00			
	The Bowker Fertilizer Co., Cincinnati, O.	Found.	9.71	9.71	2.94	12.65	5.20	5.20	14.91	44
51	**Phosphoric Acid and Potash**	Claimed.	10.00		1.00	11.00	2.00			
	Walker, Stratman & Co., Pittsburg, Pa.	Found.	8.56	8.56	1.53	10.09	1.43	1.43	9.99	51

* From sulphate.

TABLE V.—ROCK PHOSPHATE AND POTASH—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid				Potash		Total Value	Record Number
			Available		Insoluble	Total Percent				
			Percent	Value	Percent		Percent	Value		
56	**Phosphate and Potash**	Claimed.	10.00	......	2.00	12.00	2.00	......	......	.....
	The Armour Fertilizer Works, Chicago, Ill.	Found.	11.45	11.45	0.38	11.83	2.60	2.60	14.05	56
60	**Soluble Phosphate and Potash**	Claimed.	10.00	......	2.00	12.00	4.00	......	......	.....
	The Armour Fertilizer Works, Chicago, Ill.	Found.	10.99	10.99	0.26	11.25	3.76	3.76	14.75	60
62	**Cleveland Dryers' XXX Phosphate and Potash**	Claimed.	12.00	......	......	14.00	4.00	......	......	.....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	12.21	12.21	1.66	13.87	3.61	3.61	15.82	62
65	**Milsom's Dissolved Bone and Potash**	Claimed.	10.00	......	......	12.00	2.00	......	......	.....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	10.54	10.54	1.79	12.33	1.89	1.89	12.43	65
67	**Pacific's Dissolved Bone and Potash**	Claimed.	10.00	......	......	12.00	2.00	......	......	.....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	10.22	10.22	1.85	12.07	1.81	1.81	12.03	67
69	**Packers' Union Wheat, Oats and Clover**	Claimed.	10.00	......	......	12.00	2.00	......	......	.....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	9.07	9.07	3.64	12.71	1.97	1.97	11.04	69
71	**Reese's Crown Phosphate and Potash**	Claimed.	10.00	......	......	13.00	2.00	......	......	.....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	10.30	10.30	2.03	12.33	1.79	1.79	12.09	71
76	**Acidulated Bone**	Claimed.	11.00	......	......	12.00	1.00	......	......	.....
	The Western Chemical Co., Chicago, Ill.	Found.	11.70	11.70	3.52	15.22	0.95	.95	12.65	76
78	**Acidulated Bone and Potash**	Claimed.	10.00	......	1.00	11.00	2.00	......	......	.....
	The Packers' Fertilizer Co., Cincinnati, O.	Found.	9.98	9.98	1.72	11.70	1.97	1.97	11.95	78

86	**Cleveland Dryers' Horsehead Phos. and Potash**	Claimed.	10.00	....	....	12.00	2.00	....	....	.....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	9.72	9.72	2.23	11.95	2.03	2.03	11.75	86
90	**Standard's Bone and Potash**	Claimed.	10.00	....	....	12.00	2.00	....	....	.....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	9.71	9.71	2.43	12.14	2.03	2.03	11.74	90
102	**Special Phosphate and Potash**	Claimed.	10.00	....	1.00	11.00	2.00	....	....	.....
	Swift & Company, Chicago, Ill................	Found.	11.37	11.37	0.96	12.33	*2.06	2.37	13.74	102
103	**Wheat and Grass Phosphate**	Claimed.	10.00	....	1.00	11.00	2.00	....	....	.....
	The Critchfield Co., Cincinnati, O.	Found.	10.41	10.41	2.05	12.46	1.60	1.60	12.01	103
109	**Capital Dissolved Bone and Potash**	Claimed.	12.00	....	1.00	13.00	3.00	....	....	.....
	The Cincinnati Phosphate Co., Cincinnati, O.	Found.	12.34	12.34	3.07	15.41	2.28	2.28	14.62	109
110	**Capital Alkaline Bone**	Claimed.	10.00	....	1.00	11.00	2.00	....	....	.....
	The Cincinnati Phosphate Co., Cincinnati, O.	Found.	10.62	10.62	2.17	12.79	2.24	2.24	12.86	110
119	**Peerless Dissolved Bone with Potash**	Claimed.	12.00	....	1.00	13.00	1.50	....	....	.....
	The Canton Fert. and Chem. Co., Canton, O. .	Found.	13.89	13.89	1.00	14.89	*2.20	2.53	16.42	119
120	**Soluble Bone and Potash**	Claimed.	11.00	....	....	12.00	1.00	....	....	.....
	The Ohio Farmers' Fert. Co., Columbus, O.	Found.	11.38	11.38	3.39	14.77	1.10	1.10	12.48	120
153	**M. E. Wheeler's Wheat and Clover Fertilizer** ..	Claimed.	10.00	....	....	12.00	2.00	....	....	.....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	10.41	10.41	2.17	12.58	1.97	1.97	12.38	153
154	**High Grade Potash Manure**	Claimed.	10.00	....	....	12.00	5.00	....	....	.....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	10.48	10.48	1.92	12.40	5.28	5.28	15.76	154
173	**Potash Mixture**	Claimed.	10.00	....	1.00	....	2.00	....	....	.....
	The Jones Fertilizing Co., Louisville, Ky.	Found.	11.77	11.77	1.15	12.92	*2.14	2.46	14.23	173
177	**High Grade Corn and Wheat Grower with Potash**	Claimed.	10.00	....	1.00	11.00	2.00	....	....	.....
	The Queen City Fertilizer Co., Cincinnati, O.	Found.	10.22	10.22	2.49	12.71	1.29	1.29	11.51	177
180	**Calumet Phosphate**	Claimed.	11.00	....	....	12.00	1.00	....	....	.....
	The Chicago Fertilizer Co., Chicago, Ill.	Found.	10.62	10.62	4.02	14.64	1.31	1.31	11.93	180

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* From sulphate.

TABLE V.—ROCK PHOSPHATE AND POTASH—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid				Potash		Total Value	Record Number
			Available		Insoluble	Total Percent				
			Percent	Value	Percent		Percent	Value		
205	**Great Eastern's Soluble Bone and Potash**	Claimed.	10.00	....	....	12.00	2.00	....	....	.....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	9.21	9.21	4.02	13.23	2.26	2.26	11.47	205
214	**Square Brand Phosphate and Potash**	Claimed.	10.00	....	1.00	11.00	2.00	....	....	.....
	The Jarecki Chem. Co., Sandusky and Cin., O.	Found.	11.45	11.45	3.58	15.03	2.41	2.41	13.86	214
215	**Dissolved Bone with Potash**	Claimed.	12.00	....	1.00	13.00	3.00	....	....	.....
	The Jarecki Chem. Co., Sandusky and Cin., O.	Found.	10.42	10.42	4.22	14.64	2.57	2.57	12.99	215
219	**Soluble Bone and Potash**	Claimed.	10.00	....	1.00	11.00	2.00	....	....	.....
	S. M. Hess & Bro., Philadelphia, Pa.........	Found.	10.42	10.42	1.59	12.01	2.03	2.03	12.45	219
237	**Competitor Phosphate**	Claimed.	10.00	....	2.00	12.00	1.00	....	....	.....
	The Wuichet Fertilizer Co., Dayton, O.	Found.	9.28	9.28	1.46	10.74	0.52	.52	9.80	237
240	**Wheat Maker**	Claimed.	10.00	....	1.00	11.00	2.00	....	....	.....
	The Buckeye Fert. Co., Columbus, O.	Found.	11.52	11.52	3.19	14.71	1.22	1.22	12.74	240
242	**Phosphate and Potash**	Claimed.	10.00	....	1.00	11.00	2.00	....	....	.....
	The E.Rauh & Sons Fert. Co., Indianapolis, Ind.	Found.	11.83	11.83	2.81	14.64	*0.96	1.10	12.93	212
250	**Bradley's Alkaline Bone and Potash**	Claimed.	10.00	....	....	12.00	2.00	....	....	.....
	The Amer. Agri. Chem. Co., New York, N. Y.	Found.	9.53	9.53	3.39	12.92	1.81	1.81	11.34	250
258	**Dissolved Bone and Potash**	Claimed.	12.00	....	2.00	14.00	4.00	....	....	.....
	The Western Union Chem. Co. Cleveland, O..	Found.	12.15	12.15	1.15	13.30	3.97	3.97	16.12	258

260	**Bone, Phosphate and Potash**	Claimed.	10.00	....	1.00	11.00	4.00	....	....	.....
	The Fox Chemical Co., Louisville, Ky.	Found.	11.31	11.31	0.83	12.14	1.97	1.97	13.28	260
265	**Special Alkaline Bone**	Claimed.	10.00	....	2.00	12.00	4.00	....	....	.....
	The I. P. Thomas & Son Co., Phila., Pa.	Found.	9.21	9.21	1.02	10.23	3.68	3.68	12.89	265
273	**Read's Bone and Potash**	Claimed.	10.00	....	....	12.00	2.00	....	....	.....
	The Am. Agri. Chem. Co., New York, N. Y.	Found.	10.68	10.68	1.21	11.89	2.03	2.03	12.71	273
303	**Clark's Cove Triumph Bone and Potash**	Claimed.	10.00	....	....	12.00	2.00	....	....	.....
	The Am. Agri. Chem. Co., New York, N. Y.	Found.	10.67	10.67	1.53	12.20	2.08	2.08	12.75	303
309	**Alkaline Bone**	Claimed.	10.00	....	1.00	11.00	2.00	....	....	.....
	The Fox Chemical Co., Louisville Ky.	Found.	10.03	10.03	0.64	10.67	1.56	1.56	11.59	309
313	**Bone and Potash Fertilizer**	Claimed.	10.00	....	1.00	11.00	2.00	....	....	.....
	The Rasin-Monumental Co., Baltimore, Md.	Found.	10.10	10.10	0.90	11.00	2.77	2.77	12.87	313
315	**Red Line Phosphate with Potash**	Claimed.	10.00	....	....	12.00	2.00	....	....	.....
	Michigan Carbon Works, Detroit, Mich.	Found.	9.97	9.97	2.30	12.27	1.79	1.79	11.76	315
319	**Detrick's Alkaline Bone**	Claimed.	10.00	....	....	12.00	2.00	....	....	.....
	The Am. Agri. Chem. Co., New York, N. Y.	Found.	9.41	9.41	2.23	11.64	2.06	2.06	11.47	319
349	**Big Crop Bone Phosphate and Potash**	Claimed.	10.00	....	1.00	11.00	3.00	....	....	.....
	George W. Mace, Greenville, Ohio	Found.	11.75	11.75	0.77	12.52	2.30	2.30	14.05	349
357	**Potash Special**	Claimed.	10.00	....	1.00	11.00	2.00	....	....	.....
	The Globe Fertilizer Co., Louisville, Ky.	Found.	10.42	10.42	1.02	11.44	1.64	1.64	12.06	357
358	**Big Four Phosphate**	Claimed.	9.00	....	1.00	10.00	1.00	....	....	.....
	The Globe Fertilizer Co.. Louisville, Ky.	Found.	10.35	10.35	0.96	11.31	*0.52	.60	10.95	358
361	**Phosphate and Potash**	Claimed.	11.00	....	....	12.00	1.00	....	....	.....
	The Hardy Packing Co., Chicago, Ill	Found.	11.89	11.89	3.52	15.41	1.35	1.35	13.24	361
369	**Potash Special**	Claimed.	9.00	....	1.00	10.00	3.00	....	....	.....
	The Central Ohio Fertilizer Co., Mt. Vernon, O.	Found.	10.94	10.94	2.11	13.05	*2.58	2.97	13.91	369

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* From sulphate.

TABLE V.—ROCK PHOSPHATE AND POTASH—Concluded.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid				Potash		Total Value	Record Number
			Available		Insoluble	Total Percent				
			Percent	Value	Percent		Percent	Value		
370	**Cumberland's Bone and Potash**	Claimed.	10.00	....	....	12.00	2.00	....	....	.....
	The Am. Agri. Chem. Co., New York, N. Y...	Found.	11.13	11.13	1.72	12.85	1.99	1.99	13.12	370
377	**Soluble Bone and Potash**	Claimed.	10.00	....	....	12.00	2.00	....	....	.....
	Packers' Fert. Association, Chicago, Ill.	Found.	10.61	10.61	1.85	12.46	2.18	2.18	12.79	377
379	**Farmers' Union Dissolved Bone and Potash**	Claimed.	10.00	....	....	12.00	2.00	....	....	.....
	The Am. Agri. Chem. Co., New York, N. Y...	Found.	10.67	10.67	1.98	12.65	1.89	1.89	12.56	379
381	**Zell's Electric Phosphate**	Claimed.	10.00	....	....	12.00	2.00	....	....	.....
	The Am. Agri. Chem. Co., New York, N. Y...	Found.	10.48	10.48	1.85	12.33	1.70	1.70	12.18	381
398	**Bone, Phosphate and Potash**	Claimed.	10.00	....	1.00	11.00	4.00	....	....	.....
	The Globe Fert. Co., Louisville, Ky.	Found.	10.67	10.67	0.90	11.57	2.91	2.91	13.58	398
399	**Potash Compound**	Claimed.	12.00	....	1.00	13.00	2.00	....	....	.....
	The Globe Fert. Co., Louisville, Ky.	Found.	12.92	12.92	0.83	13.75	1.68	1.68	14.60	399
402	**Lawrence's Wheat Special**	Claimed.	10.00	....	2.00	12.00	1.00	....	....	.....
	The Royal Fert. Co., Cleveland, O.	Found.	9.84	9.84	2.43	12.27	2.01	2.01	11.85	402
409	**Dissolved Bone, Phosphate and Potash**	Claimed.	13.00	....	2.00	15.00	1.00	....	....	.....
	George W. Mace, Greenville, O.	Found.	14.14	14.14	1.34	15.48	1.29	1.29	15.43	409
412	**Natural Plant Food**	Claimed.	8.00	....	1.00	9.00	2.00	....	....	.....
	The Toledo Rendering & Fert. Co., Bucyrus, O.	Found.	7.10	7.10	1.08	8.18	2.06	2.06	9.16	412

416	**Williams & Clark's Dissolved Bone and Potash**	Claimed.	10.00	......	......	12.00	2.00	......	......	.....
	The Am. Agri. Chem. Co., New York, N. Y...	Found.	9.98	9.98	2.94	12.92	2.14	2.14	12.12	416
418	**High Grade Potash Manure**	Claimed.	10.00	......	......	12.00	5.00	......	......	.....
	The Northwestern Fertilizing Co., Chicago, Ill.	Found.	10.36	10.36	2.87	13.23	4.84	4.84	15.20	418
419	**High Grade Potash Manure**	Claimed.	10.00	......	......	12.00	5.00	......	......	.....
	Michigan Carbon Works, Detroit, Mich.	Found.	9.67	9.67	3.25	12.92	5.45	5.45	15.12	419
431	**Dissolved Bone and Potash**	Claimed.	10.00	......	1.00	11.00	2.00	......	......	.....
	The Allegheny City Fert. Wks., Allegheny, Pa.	Found.	8.57	8.57	1.08	9.65	1.39	1.39	9.96	431
432	**Special Potash Phosphate**	Claimed.	10.00	......	1.00	11.00	6.00	......	......	.....
	The Allegheny City Fert. Wks., Allegheny, Pa.	Found.	9.53	9.53	1.34	10.87	5.90	5.90	15.43	432
434	**Potash and Bone Phosphate**	Claimed.	10.00	......	1.00	11.00	6.00	......	......	.....
	Walker, Stratman & Co., Pittsburg, Pa.	Found.	9.08	9.08	1.21	10.29	4.89	4.89	13.97	434
482	**Bone and Potash**	Claimed.	12.00	......	1.00	13.00	2.00	......	......	.....
	L. Frank & Sons, Zanesville, O.	Found.	12.93	12.93	1.33	14.26	1.99	1.99	14.92	482
484	**Dissolved Bone and Extra Potash**	Claimed.	10.00	......	1.00	11.00	4.00	......	......	.....
	The Schaal-Sheldon Fertilizer Co., Erie, Pa. ..	Found.	10.68	10.68	1.59	12.27	3.78	3.78	14.46	484
486	**Dissolved Bone and Potash**	Claimed.	12.00	......	1.00	13.00	4.00	......	......	.....
	G. W. Rickard, Medina, O.	Found.	12.73	12.73	1.08	13.81	4.62	4.62	17.35	486
488	**Quinnipiac's Dissolved Bone and Potash**	Claimed.	10.00	......	......	12.00	2.00	......	......	.....
	The Am. Agri. Chem. Co., New York, N. Y...	Found.	10.10	10.10	2.30	12.40	1.66	1.66	11.76	488
496	**Ox Potash Mixture**	Claimed.	10.00	......	1.00	......	2.00	......	......	.....
	The Tennessee Chem. Co., Nashville, Tenn. ..	Found.	11.19	11.19	0.19	11.38	*1.97	2.27	13.46	496
503	**Phosphate and Potash**	Claimed.	10.00	......	1.00	11.00	2.00	......	......	.....
	The Farmers' Fertilizer Co., Indianapolis, Ind.	Found.	12.34	12.34	0.83	13.17	*1.89	2.17	14.51	503
544	**Ten and Two**	Claimed.	10.00	......	1.00	11.00	2.00	......	......	.....
	The Seneca Fertilizer Co., Tiffin, O.	Found.	10.93	10.93	1.02	11.95	*1.83	2.10	13.03	544
549	**Grain and Grass Grower**	Claimed.	10.00	......	1.00	11.00	2.00	......	......	.....
	The I. P. Thomas & Son Co., Philadelphia, Pa.	Found.	10.68	10.68	0.83	11.51	1.93	1.93	12.61	549

* From sulphate.

TABLE VI.—TANKAGE.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Phosphoric Acid.		Total Value	Record Number
			Percent	Value	Percent	Value		
390	**Steamed Bone**	Claimed.	2.00	....	20.00	....	....	....
	The Tuscarora Fertilizer Co., Chicago, Ill.	Found.	2.45	4.66	21.68	13.01	17.67	390

TABLE VIII.—Bones.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia		Phosphoric Acid					Potash (When included)		Total Value	Record Number
					In Fine Bone		In Med. Bone						
			Percent	Value	Percent	Value	Percent	Value	Total Percent	Percent	Value		
1	**Pure Bone Flour**	Claimed.	3.00	......	......	......	......	......	21.00	......	......	......	...
	Geo. S. Bartlett, Newport, Ky.	Found.	3.02	8.00	15.61	11.71	7.14	4.28	22.75	......	......	23.99	1
3	**Chicago Raw Bone**	Claimed.	1.50	......	......	......	......	......	27.00	......	......	......	...
	The Chicago Fertilizer Co., Chicago, Ill.	Found.	0.95	2.52	27.69	20.77	6.08	3.65	33.77	......	......	26.94	3
45	**Big Two, Pure Bone Meal**	Claimed.	2.55	......	......	......	......	......	27.30	......	......	......	...
	Nelson Morris & Co., Chicago, Ill.	Found.	2.90	7.69	23.58	17.68	3.22	1.93	26.80	......	......	27.30	45
47	**Big Six, Special Bone Meal**	Claimed.	1.35	......	......	......	......	......	24.04	......	......	......	...
	Nelson Morris & Co., Chicago, Ill.	Found.	1.95	5.17	22.85	17.14	2.56	1.54	25.41	......	......	23.85	47
52	**Bone Meal**	Claimed.	3.00	......	......	......	......	......	24.00	......	......	......	...
	The Armour Fertilizer Works, Chicago, Ill.	Found.	3.80	10.07	17.26	12.94	7.75	4.65	25.01	......	......	27.66	52
115	**Bone Meal**	Claimed.	3.00	......	......	......	......	......	20.00	......	......	......	...
	George A. Bell, Wheelersburg, O.	Found.	3.20	8.48	10.44	7.83	9.26	5.56	19.70	......	......	21.87	115
125	**Bone Meal**	Claimed.	3.00	......	......	......	......	......	25.00	......	......	......	...
	The Buffalo Fertilizer Co., Buffalo, N. Y.	Found.	3.20	8.48	15.79	11.84	7.43	4.46	23.22	......	......	24.78	125
126	**Bone Meal**	Claimed.	3.00	......	......	......	......	......	20.00	......	......	......	...
	The Queen City Fert. Co., Cincinnati, O.	Found.	2.55	6.76	16.11	12.08	6.66	4.00	22.77	......	......	22.84	126
135	**Bone Meal**	Claimed.	2.00	......	......	......	......	......	20.00	......	......	......	...
	The Bowker Fert. Co., Cincinnati, O	Found.	2.35	6.23	12.64	9.48	7.94	4.76	20.58	......	......	20.47	135

TABLE VIII.—Bones—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia		Phosphoric Acid					Potash (When included)		Total Value	Record Number
					In Fine Bone		In Med. Bone		Total Percent				
			Percent	Value	Percent	Value	Percent	Value		Percent	Value		
159	**Bone and Potash**	Claimed.	3.00	......	......	......	......	......	23.50	3.00	......	......	...
	Swift & Company, Chicago, Ill.	Found.	2.75	7.29	16.81	12.61	6.54	3.92	23.35	*3.80	4.37	28.19	159
211	**Raw Bone Meal**	Claimed.	4.50	......	......	......	......	......	23.00	......	......	......	...
	Swift & Company, Chicago, Ill.	Found.	5.00	13.25	14.48	10.86	9.25	5.55	23.73	......	......	29.66	211
220	**Ground Bone**	Claimed.	3.00	......	......	......	......	......	20.00	......	......	......	...
	S. M. Hess & Bro., Philadelphia, Pa.	Found.	3.60	9.54	12.28	9.21	6.91	4.15	19.19	......	......	22.90	220
225	**Pure Raw Bone Meal**	Claimed.	5.00	......	......	......	......	......	22.00	......	......	......	...
	The Pittsburg Prov. & Pkg. Co., Pittsburg, Pa.	Found.	5.00	13.25	13.50	10.12	6.07	3.64	19.57	......	......	27.01	225
228	**Pure Raw Bone Meal**	Claimed.	4.00	......	......	......	......	......	22.00	......	......	......	...
	Walker, Stratman & Co., Pittsburg, Pa.	Found.	4.35	11.53	15.86	11.89	5.57	3.34	21.43	......	......	26.76	228
241	**Pure Ground Bone**	Claimed.	3.00	......	......	......	......	......	23.00	......	......	......	...
	Darling & Company, Chicago, Ill.	Found.	3.90	10.34	18.15	13.61	7.06	4.24	25.21	......	......	28.19	241
246	**Armour's Steamed Bone**	Claimed.	2.00	......	......	......	......	......	20.00	......	......	......	...
	The Armour Fertilizer Works, Chicago, Ill.	Found.	2.85	7.55	17.22	12.91	3.80	2.28	21.02	......	......	22.74	246
247	**Fine Ground Bone Meal**	Claimed.	2.50	......	......	......	......	......	24.00	......	......	......	...
	The M. Hamm Co., Washington C. H., O.	Found.	4.00	10.60	11.87	8.90	8.60	5.16	20.47	......	......	24.66	247
256	**Packers' Raw Bone**	Claimed.	1.50	......	......	......	......	......	27.00	......	......	......	...
	The Hardy Packing Co., Chicago, Ill.	Found.	1.60	4.24	21.80	16.35	6.99	4.19	28.79	......	......	24.78	256

271	**Fine Raw Bone Meal**	Claimed.	1.50	......	......	......	......	......	27.00	......	......	......	...
	The Abbott & Martin Rd. Co., Columbus, O.	Found.	1.50	3.98	16.77	12.58	11.48	6.89	28.25	......	......	23.45	271
275	**Bone Meal**	Claimed.	3.00	......	......	......	......	......	20.00	......	......	......	...
	The Packers' Fertilizer Co., Cincinnati, O...	Found.	2.75	7.29	12.55	9.41	8.14	4.88	20.69	......	......	21.58	275
298	**Pure Bone Meal**	Claimed.	4.00	......	......	......	......	......	21.00	......	......	......	...
	L. Frank & Sons, Zanesville, O.	Found.	3.15	8.35	22.15	16.61	3.31	1.99	25.46	......	......	26.95	298
325	**Bone Meal**	Claimed.	3.00	......	......	......	......	......	25.00	......	......	......	...
	Swift & Company, Chicago, Ill.	Found.	2.90	7.69	21.28	15.96	5.65	3.39	26.93	......	......	27.04	325
333	**Lawn Fertilizer**	Claimed.	4.50	......	......	......	......	......	23.00	......	......	......	...
	Swift & Company, Chicago, Ill.	Found.	5.10	13.52	18.09	13.57	5.71	3.43	23.80	......	......	30.52	333
334	**Raw Bone**	Claimed.	4.50	......	......	......	......	......	22.00	......	......	......	...
	The Armour Fertilizer Works, Chicago, Ill....	Found.	4.60	12.19	19.55	14.66	5.20	3.12	24.75	......	......	29.97	334
353	**Superior Pure Raw Bone**	Claimed.	4.00	......	......	......	......	......	22.00	......	......	......	...
	The Wuichet Fertilizer Co., Dayton, O.	Found.	4.95	13.12	14.36	10.77	7.07	4.24	21.43	......	......	28.13	353
355	**Dessicated Bone**	Claimed.	1.50	......	......	......	......	......	25.00	......	......	......	...
	Michigan Carbon Works, Detroit, Mich.	Found.	1.50	3.98	17.60	13.20	9.46	5.68	27.06	......	......	22.86	355
366	**Ground Bone**	Claimed.	1.50	......	......	......	......	......	25.00	......	......	......	...
	The Western Chem. Co., Chicago, Ill.	Found.	1.20	3.18	22.30	16.72	5.59	3.35	27.89	......	......	23.25	366
373	**Special Bone Meal**	Claimed.	1.00	......	......	......	......	......	27.50	......	......	......	...
	Swift & Company, Chicago, Ill.	Found.	1.35	3.58	20.02	15.01	9.41	5.65	29.43	......	......	24.24	373
374	**Peerless Bone Meal**	Claimed.	2.75	......	......	......	......	......	22.00	......	......	......	...
	The Canton Fert. & Chem. Co., Canton, O.	Found.	3.45	9.14	17.09	12.82	3.25	1.95	20.34	......	......	23.91	374
387	**Pure Raw Bone Meal**	Claimed.	4.00	......	......	......	......	......	22.00	......	......	......	...
	The Allegheny City Fert. Wks., Allegheny, Pa.	Found.	4.80	12.72	14.31	10.73	6.73	4.04	21.04	......	......	27.49	387
400	**Peerless Raw Bone**	Claimed.	4.00	......	......	......	......	......	22.00	......	......	......	...
	The Canton Fert. & Chem. Co., Canton, O.	Found.	5.10	13.52	6.83	5.12	15.94	9.56	22.77	......	......	28.20	400

TABLE VIII.—Bones—Concluded.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia		Phosphoric Acid					Potash (When included)		Total Value	Record Number
					In Fine Bone		In Med. Bone		Total Percent				
			Percent	Value	Percent	Value	Percent	Value		Percent	Value		
420	**Pure Bone**	Claimed.	3.00	......	......	......	......	......	24.00	......	......	......	...
	Joslin, Schmidt & Co., Cincinnati, O.	Found.	2.80	7.42	25.36	19.02	1.06	.64	26.42	......	......	27.08	420
426	**Pure Bone Meal**	Claimed.	3.00	......	......	......	......	......	22.00	......	......	......	...
	The Farmers' Fert. Co., Indianapolis Ind.	Found.	3.05	8.08	13.87	10.40	9.49	5.69	23.36	......	......	24.17	426
427	**Two and Twenty Bone**	Claimed.	2.00	......	......	......	......	......	18.00	......	......	......	...
	Darling & Company, Chicago, Ill.............	Found.	3.45	9.14	12.33	9.25	7.56	4.54	19.89	......	......	22.93	427
453	**Superior Pure Ground Bone**	Claimed.	4.00	......	......	......	......	......	22.00	......	......	......	...
	The Toledo Rd. & Fert. Co., Bucyrus, O.	Found.	4.30	11.40	8.47	6.35	9.18	5.51	17.65	......	......	23.26	453
455	**Big One, Pure Ground Raw Bone**	Claimed.	4.80	......	......	......	......	......	20.66	......	......	......	...
	Nelson Morris & Co., Chicago, Ill............	Found.	5.00	13.25	8.28	6.21	13.39	8.03	21.67	......	......	27.49	455
456	**Raw Bone Meal**	Claimed.	1.50	......	......	......	......	......	27.00	......	......	......	...
	The Ohio Farmers' Fert. Co., Columbus, O. ..	Found.	2.40	6.36	21.48	16.11	8.77	5.26	30.25	......	......	27.73	456
467	**Bucyrus Bone Meal**	Claimed.	3.00	......	......	......	......	......	20.00	......	......	......	...
	The Toledo Rd. & Fert. Co., Bucyrus, O.	Found.	4.05	10.73	8.45	6.34	7.02	4.21	15.47	......	......	21.28	467
470	**Bone Meal**	Claimed.	2.00	......	......	......	......	......	20.00	......	......	......	...
	The Buckeye Fert. Co., Columbus, O.	Found.	1.75	4.64	15.50	11.62	7.55	4.53	23.05	......	......	20.79	470
471	**Pure Raw Bone**	Claimed.	4.60	......	......	......	......	......	22.00	......	......	......	...
	The Alliance Fert. Co., Alliance, O.	Found.	4.90	12.99	12.60	9.45	9.92	5.95	22.52	......	......	28.39	471

477	**Ground Raw Bone**	Claimed.	4.00	......	......	......	......	......	21.00	......	......	......	...
	Darling & Company, Chicago, Ill.	Found.	4.95	13.12	15.70	11.77	8.03	4.82	23.73	......	......	29.71	477
483	**Tiger Bone Meal**	Claimed.	1.50	......	......	......	......	......	25.00	......	......	......	...
	The Western Union Chem. Co., Cleveland, O.	Found.	1.75	4.64	14.50	10.87	10.13	6.08	24.63	......	......	21.59	483
485	**Schaal's Pure Bone Meal**	Claimed.	4.00	......	......	......	......	......	22.00	......	......	......	...
	The Schaal-Sheldon Fert. Co., Erie, Pa.	Found.	4.45	11.79	13.80	10.35	6.80	4.08	20.60	......	......	26.22	485
501	**Pure Ground Bone**	Claimed.	3.00	......	......	......	......	......	22.00	......	......	......	...
	The E. Rauh & Sons Ft. Co., Indianapolis, Ind.	Found.	2.75	7.29	16.80	12.60	11.22	6.73	28.02	......	......	26.62	501
507	**Pure Bone Meal**	Claimed.	5.00	......	......	......	......	......	30.00	......	......	......	...
	Chas. Herrman, Scioto, O.	Found.	5.25	13.91	12.90	9.67	8.21	4.93	21.11	......	......	28.51	507
508	**Animal Bone**	Claimed.	3.00	......	......	......	......	......	24.00	......	......	......	...
	The Tuscarora Fert. Co., Chicago, Ill.	Found.	3.10	8.22	20.30	15.22	7.08	4.25	27.38	......	......	27.69	508
510	**Bone Meal**	Claimed.	3.00	......	......	......	......	......	20.00	......	......	......	...
	The Muskingum Vy. Fert. Co., Marietta, O.	Found.	3.20	8.48	14.20	10.65	6.71	4.03	20.91	......	......	23.16	510
511	**Pure Raw Bone**	Claimed.	5.00	......	......	......	......	......	20.00	......	......	......	...
	The Marietta Bone & Phos. Co., Marietta, O.	Found.	5.60	14.84	18.23	13.67	......	......	18.23	......	......	26.51	511
516	**Acorn Bone Meal**	Claimed.	3.00	......	......	......	......	......	20.00	......	......	......	...
	The Globe Fert. Co., Louisville, Ky.	Found.	3.65	9.67	16.70	12.52	9.40	5.64	26.10	......	......	27.83	516
528	**Pure Raw Bone Meal**	Claimed.	4.50	......	......	......	......	......	23.00	......	......	......	...
	The J. L. & H. Stadler Rd. & Ft. Co., Cleve'd, O.	Found.	4.65	12.32	18.00	13.50	5.80	3.48	23.80	......	......	29.30	528
534	**Honest Animal Bone Meal**	Claimed.	3.00	......	......	......	......	......	24.00	......	......	......	...
	G. W. Rickard, Medina, O.	Found.	3.20	8.48	22.70	17.02	3.97	2.38	26.67	......	......	27.88	534
546	**Pure Bone Meal**	Claimed.	3.00	......	......	......	......	......	23.00	......	......	......	...
	The Central Ohio Fert. Co., Mt. Vernon, O.	Found.	1.10	2.92	17.34	13.00	14.19	8.51	31.53	......	......	24.43	546

TABLE IX.—POTASH SALTS.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Potash		Record Number
			Percent	Value	
232	**No. 1 Syndicate Sulphate of Potash**	Claimed.	49.00	....	....
	James Bonday, Jr., & Co., Baltimore, Md	Found.	*47.80	54.97	232
283	**No. 1 Syndicate Muriate of Potash**	Claimed.	50.00	....	....
	James Bonday, Jr., & Co., Baltimore, Md	Found.	48.25	48.25	283
397	**Screened Hickory Wood Ashes**	Claimed.	6.00	....	....
	Swift & Company, Chicago, Ill	Found.	7.67	7.67	397

* From sulphate.

TABLE X.—NITRATE OF SODA.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Record Number
			Percent	Value	
294	**Nitrate of Soda**	Claimed.	19.00		
	The Armour Fertilizer Works, Chicago, Ill.	Found.	19.25	51.01	294
417	**Nitrate of Soda**	Claimed.			
	The American Agricultural Chemical Co., New York, N. Y.	Found.	19.10	50.62	417
520	**Nitrate of Soda**	Claimed.	19.00		
	The Buckeye Fertilizer Co., Columbus, O.	Found.	18.50	49.03	520

LIST OF COMMERCIAL FERTILIZERS PROPERLY LICENSED

And offered for sale in Ohio in 1904, but samples of which were *not found* by the Secretary or Deputies on the markets, hence they have not been analyzed, and their valuations do not appear in this report.

MANUFACTURERS' CLAIMS.

Address of Manufacturer and Name of Fertilizer.	Ammonia	Phosphoric Acid			Potash
		Available	Insoluble	Total	
	Percent	Percent	Percent	Percent	Percent
The Allegheny City Fertilizer Works, Allegheny, Pa.—					
Acid Phosphate	....	14.00—15.00	1.00— 1.50	15.00—16.00	....
The American Agricultural Chemical Co., New York, N. Y.—					
Cumberland's Acid Phosphate	....	10.00	....	12.00	....
Farmers' Union Erie Queen	....	12.00	....	14.00	....
Farmers' Union Standard Phosphate	1.50	9.00	....	11.00	2.00
Niagara's Dissolved Bone and Potash	....	10.00	....	12.00	2.00
Niagara's Dissolved Bone	....	14.00	....	16.00	....
Quinnipiac's Mohawk Fertilizer	1.00	7.00	....	9.00	1.00
Read's Farmers' Friend	2.50	8.00	....	10.00	3.00
Standard's Guano	1.25	8.00	....	10.00	2.00
Zell's Dissolved S. C. Phosphate	....	12.00	....	14.00	....
The Armour Fertilizer Works, Chicago, Ill., and Nashville, Tenn.—					
Bone and Blood	7.00—8.00	5.00— 7.00	4.00— 6.00	10.00—12.00	....
German Kainit	....	....	....	....	12.00
Muriate of Potash	....	....	....	....	48.00
Sulphate of Potash	....	....	....	....	50.00

The Bash Packing Co., Fort Wayne, Ind.—					
Grain Grower	1.00—2.00	8.00	1.00	9.00	2.00
James Bonday, Jr., & Co., Baltimore, Md.—					
Old Reliable Brand, Genuine German Kainit	....	....	....	....	12.00—14.00
The Continental Fertilizer Co., Nashville, Tenn., and Louisville, Ky.—					
Bear High Grade Dissolved Bone	....	14.00—16.00	1.00— 2.00	15.00—17.00	....
Bear Phosphate	....	12.00—14.00	1.00— 2.00	13.00—16.00	....
Bear Potash Mixture	....	10.00—12.00	1.00— 2.00	....	2.00— 3.00
Bear Special Corn Grower	1.00—2.00	7.00— 9.00	1.00— 2.00	....	1.00— 2.00
Bear Special Wheat Grower	1.00—2.00	7.00— 9.00	1.00— 2.00	....	1.00— 2.00
The Currie Fertilizer Co., Louisville, Ky.—					
Climax Tobacco and Potato Grower	1.25	9.50	2.50	12.00	1.50
Corn and Wheat Special	1.00	10.00	2.50	12.50	1.00
Darling & Company, Chicago, Ill.—					
Vegetable and Lawn Fertilizer	4.00—5.00	7.00— 9.00	....	9.00—11.00	7.00— 9.00
The Fox Chemical Co., Louisville, Ky.—					
Wheat and Grain Special	1.00	12.00	1.00	13.00	1.00
The Globe Fertilizer Co., Louisville, Ky.—					
Wheat and Grain Special	1.00	12.00	1.00	13.00	1.00
S. M. Hess & Bro., Philadelphia, Pa.—					
Tobacco Manure	3.00	8.00	2.00	10.00	6.00
The International Seed Co., Rochester, N. Y.—					
Electric Guano	1.00	8.00	2.00	10.00	2.00
Grain and Grass Fertilizer	2.00	10.00	1.00	11.00	2.00
The Jones Fertilizing Co., Louisville, Ky.—					
High Grade Dissolved Bone	....	14.00—16.00	1.00— 2.00	15.00—17.00	....
Phosphate	....	12.00—14.00	1.00— 2.00	13.00—16.00	....
Reliable	1.00—2.00	8.00—10.00	1.00— 2.00	....	1.50— 2.00
A. C. Kendel, Cleveland, O—					
Raw Bone Meal	4.00—5.00	....	....	22.00—25.00	....

LIST OF COMMERCIAL FERTILIZERS PROPERLY LICENSED—Concluded.

MANUFACTURERS' CLAIMS.

Address of Manufacturer and Name of Fertilizer.	Ammonia	Phosphoric Acid			Potash
		Available	Insoluble	Total	
	Percent	Percent	Percent	Percent	Percent
The Louisville Fertilizer Co., Louisville, Ky.—					
Eagle High Grade Dissolved Bone	....	14.00—16.00	1.00— 2.00	15.00—17.00	....
Eagle Phosphate	....	12.00—14.00	1.00— 2.00	13.00—16.00	....
Eagle Potash Mixture	....	10.00—12.00	1.00— 2.00	....	2.00— 3.00
Eagle Special Corn Grower	1.00—2.00	7.00— 9.00	1.00— 2.00	....	1.00— 2.00
Eagle Special Wheat Grower	1.00—2.00	7.00— 9.00	1.00— 2.00	....	1.00— 2.00
Solomon Mendelson, Elyria, Ohio—					
Pure Bone Meal	4.70	....	....	22.19	....
The G. Ober & Sons Co., Baltimore, Md.—					
Dissolved Bone Phosphate	....	14.00—16.00	2.00— 3.00	16.00—19.00	....
The Packers' Fertilizer Association, Chicago, Ill.—					
Ammoniated Bone and Potash	1.00	10.00	....	12.00	1.00
The Pittsburg Provision and Packing Co., Pittsburg, Pa.—					
Acid Phosphate	....	13.00—16.00	1.00— 2.00	14.00—16.00	....
Phosphate and Potash	....	9.00—12.00	1.00— 2.00	10.00—14.00	2.00— 3.00
The Rasin-Monumental Co., Baltimore, Md.—					
Empire Guano	2.00	8.00	1.00	9.00	2.00
The E. Rauh & Sons Fertilizer Co., Indianapolis, Ind.—					
Half Pure Raw Bone and Half Pure Bone Phosphate	1.50	8.50	11.00	19.50	....

The Royal Fertilizer Co., Cleveland, Ohio—					
Old Honesty Phosphate		14.00—16.00	2.00	16.00—18.00	
The Schaal-Sheldon Fertilizer Co., Erie, Pa.—					
Schaal's Corn and Potato	2.00—3.00	8.00—10.00	1.00— 2.00	9.00—12.00	4.00— 5.00
The Scientific Fertilizer Co., Pittsburg, Pa.—					
Bone and Meat	4.00—5.00			16.00—17.00	
Bone, Meat and Potash	4.00—5.00	8.00— 9.00	2.00— 3.00	10.00—12.00	8.00— 9.00
Bone and Potash		10.00—11.00	1.00— 2.00	11.00—12.00	6.00— 7.00
Dissolved Bone		12.00—14.00	1.00— 2.00	13.00—15.00	
Phosphate and Potash		10.00—11.00	1.00— 2.00	11.00—12.00	2.00— 3.00
Scientific Potato	3.00—4.00	8.00— 9.00	2.00— 3.00	10.00—12.00	6.00— 7.00
Pure Raw Bone Meal	4.00—5.00			22.00—24.00	
R. Stephens and Co., Ashtabula, Ohio—					
Buncombe Fertilizer	2.50	10.00	10.00	20.00	2.50
Swift and Company, Chicago, Ill.—					
Ammoniated Bone	6.00			17.00	
Vegetable Grower	4.00	9.00	1.00	10.00	10.00
The Tennessee Chemical Co., Nashville, Tenn., and Louisville, Ky.—					
Ox Special Corn Grower	1.00—2.00	7.00— 9.00	1.00— 2.00		1.00— 2.00
The Western Union Chemical Co., Cleveland, Ohio—					
Grain and Grass Grower		10.00	2.00	12.00	2.00

FERTILIZER LAW.

FROM REVISED STATUTES OF OHIO.

Law to Regulate the Manufacture and Sale of Commercial Fertilizers.

SEC. 4446*a*. **[How package containing commercial fertilizer to be marked.]** Any person or company who shall offer, sell or expose for sale in this State, any commercial fertilizer, shall affix to every package, in a conspicuous place on the outside thereof, a plainly printed certificate stating the number of net pounds in the package sold or offered for sale, the name or trade mark under which the article is sold, the name of the manufacturer and the place of manufacture, and a chemical analysis stating the percentage of nitrogen, or its equivalent in ammonia, in an available form, of potash soluble in water, and of phosphoric acid, in an available form (soluble or reverted) as well as the total phosphoric acid.

SEC. 4446*b*. **[Person offering same for sale to deposit sample with Secretary State Board of Agriculture.]** Before any commercial fertilizer is sold or offered for sale, the manufacturer, importer, or party who causes it to be sold or offered for sale within the State of Ohio, shall file with the Secretary of the Ohio State Board of Agriculture a certified copy of the certificate referred to in Section One (4446*a*) of this act, and shall deposit with said Secretary, a sealed glass jar, containing not less than one pound of the fertilizer, accompanied with an affidavit that it is a fair average sample.

SEC. 4446*c*. **[Manufacturer, importer, or agent to pay license.]** The manufacturer, importer or agent of any commercial fertilizer, shall pay, annually, on or before the first day of May, a license fee of twenty dollars *on each brand*, for the privilege of selling or offering for sale within the State, said fee to be paid to the Secretary of the Ohio State Board of Agriculture; provided, that whenever the manufacturer or importer shall have paid the license fee herein required, for any person acting as agent for such manufacturer or importer, such agent shall not be required to pay the fee named in this section.

SEC. 4446*d*. **[Analysis to be made by Secretary State Board of Agriculture.]** All analyses of commercial fertilizers sold within the State shall be made by or under the direction of the Secretary of the Ohio State Board of Agriculture, and paid for out of the funds arising from license fees, as provided for in Section Three [4446*c*]. At least one analysis of each fertilizer sold shall be annually made.

SEC. 4446*e*. **[Secretary to publish, annually, report of analyses made and fees received.]** Said Secretary shall publish annually, a correct report of all analyses made and certificates filed, together with a statement of moneys received on account of license fees and expended for analyses, and any surplus arising from license permits shall be placed to the credit of the agricultural fund.

SEC. 4446*f*. **[Penalty for exposing for sale or selling commercial fertilizers unlawfully.]** Any person or party who shall offer or expose for sale, or sell, any commercial fertilizer without complying with the provisions of Sections 4446*a*, 4446*b* and 4446*c* of the Revised Statutes, or shall permit an analysis to be attached to any package of such fertilizer, stating that it contains a larger percentage of any one or more of the constituents named in said Section 4446*a* than it really does contain, shall be subject to a penalty of not less than two hundred dollars for the first offense, and not less than five hundred dollars for every subsequent offense, to be recovered in a civil action, and the offender, in all cases, shall also be liable for damages sustained by the purchasers of such fertilizers; provided, however, that a deficiency of one per cent. of the nitrogen, potash or phosphoric acid claimed to be contained, shall not be considered as evidence of fraudulent intent.

SEC. 4446*g*. **[Where suits to recover penalties may be brought.]** Suit may be brought for the recovery of penalties under the provisions of this act in the court of common pleas of the county where the fertlizer was offered for sale, or sold, or where it was manufactured; and all penalties so recovered, shall be paid into the State treasury to the credit of the general revenue fund.

SEC. 4446*h*. **[Secretary of State Board of Agriculture may select samples to be analyzed.]** The Secretary of the Ohio State Board of Agriculture, or any person by him deputized, is hereby empowered to select from any package of commercial fertilizer exposed for sale in any county in Ohio, a quantity not exceeding two pounds, which quantity shall be for analysis to compare with sample deposited with said Secretary, as provided in Section Two [4446*b*] of this act, and with the printed certificate found on the given package found on sale.

SEC. 4446*i*. **[All suits under this act to be brought by Secretary State Board of Agriculture.]** All suits for the recovery of fines under the provisions of this act, shall be brought by the Secretary of the Ohio State Board of Agriculture, in the name of the State of Ohio.

SEC. 7002. **[Unlawful sale of commercial fertilizer.]** Whoever sells, exposes for sale, or offers for sale any commercial fertilizer without having complied with the provisions of Sections 4446*a*, 4446*b* and 4446*c* of the Revised Statutes shall be fined in any sum not exceeding two hundred dollars, or imprisoned not more than thirty days, or both, and said fine or imprisonment, or both, shall not be a bar to the recovery of the civil penalty provided for by Sections 4446*f* and 4446*g* of the Revised Statutes.

BOARD
OF
LIVE STOCK
COMMISSIONERS.
PAUL FISCHER,
STATE VETERINARIAN.

W. W. MILLER,
SECRETARY.

J. W. FLEMING,
ASS'T SECY.

DIVISION
OF
NURSERY AND ORCHARD
INSPECTION.
A. F. BURGESS,
CHIEF INSPECTOR.

STATE OF OHIO
DEPARTMENT OF AGRICULTURE
Division of Commercial Feed Stuffs

COLUMBUS, OHIO, December 31, 1904.

To the Manufacturers and Users of Commercial Feed Stuffs:

The Seventy-sixth General Assembly of Ohio, at its regular session in 1904, enacted a law to regulate the sale of Commercial Feed Stuffs, and charged the Secretary of the Ohio State Board of Agriculture with its administration. Since the enactment of the law the Secretary has had the state thoroughly canvassed by Deputy Inspectors for the purpose of securing samples of commercial feed stuffs to be analyzed, and acquainting manufacturers and dealers with the provisions of the law. Many commercial feed stuffs have been found on sale in the state; a large percentage, however, were purchased before the law went into effect. Of the sixty-four brands licensed according to law, samples of sixty were found, and analyzed by the Official Chemist. The claims of feeding ingredients of these sixty brands, together with chemical findings, are here published, as provided by law.

All licenses to sell commercial feed stuffs in Ohio expire this day; therefore the necessity of securing licenses for the year 1905 before feed stuffs are sold or offered for sale by manufacturers, importers or dealers. Dealers should be very careful not to purchase or accept goods on commission not properly licensed by the undersigned for the year 1905.

All manufacturers of, dealers in and users should co-operate with the undersigned in enforcing the law to regulate the sale of commercial feed stuffs, and I sincerely hope they will do so.

Manufacturers and importers, when applying for licenses, will greatly aid the Secretary in sampling their goods, by stating where goods may be found.

SAMPLES SENT BY MANUFACTURERS.

To comply with the law, manufacturers should always send samples of commercial feed stuffs, when making application for licenses, that they may be used in comparison with those drawn on the markets of the state.

ADVANCE REPORTS.

It is my custom to send advance reports of analyses to manufacturers, to give them an opportunity to check the Chemist's work, before the results are published in the annual report, in order to insure accuracy. The analyses reported will be published unless some errors are shown. It is not sufficient to claim the analyses are wrong because they show lower percentages than the manufacturers claim; this is not proof or evidence of error. The object of sending these advance reports is to enable me to eliminate errors, should they exist. When manufacturers are dissatisfied with findings I will have samples re-tested, and will, if requested, cause parts of the samples in question to be sent to any member of the Association of Official Agricultural Chemists, of which Prof. Harvey W. Wiley, of Washington, D. C., is Secretary; but the manufacturers making such requests must pay the chemists they select for making analyses.

REGULAR ANALYSES.

The work of sampling and analyzing feed stuffs is done in accordance with the law of the state, and under this law the Official Chemist analyzes such samples as are furnished him by the Secretary of the State Board of Agriculture.

Samples are drawn from the open markets of the state, and from stocks purchased by consumers, by my duly authorized Deputy Inspectors, F. A. Derthick, Ed. Loewer, R. H. Ramsdell, B. M. Derthick and M. R. Merritt. Great care is taken in this work, and samples are drawn from every brand that can be found in the state by diligent search and inquiry. It is regretted that samples of all licensed goods could not be found.

SPECIAL ANALYSES.

I sometimes have requests from manufacturers, dealers and consumers to make special analyses of samples of commmercial feed stuffs. I am obliged to say that the law does not provide for these, and I have no fund for paying for the work involved. If it will be an accommodation, I will have special analyses made by the Official Chemist of such samples as may be sent me, with the proper fees of ten dollars ($10) each. In selecting samples for analyses great care should be taken to secure fair average of the goods.

FEEDING STUFFS.

The materials employed in the feeding of farm animals are varied in character and money value. Few of them can be successfully fed alone, because of the unfavorable relation of the nutrients for the production of the best results desired by the feeder. For this reason empirical observations long ago led to a limited combination of feeding materials, without any special regard to their chemical composition. Thus the general practice of feeding grain, bran, legumes, etc., with hay, straw and tubers or roots, for the evident improvement in the production of work, flesh, milk, wool, etc., had its origin. Valuable as these observations were in the treatment of farm animals, there was still the same groping in the darkness which existed in the production of plants before scientific investigations developed a rational system of vegetable nutrition. What science accomplished in the intelligent use of plant food for the production of crops it was destined later to accomplish for the other important agricultural industry, in establishing a rational system of animal nutrition. This is not the place to even refer to the intricate metabolic changes which nutrients undergo in the animal economy in building up the various constituents and products of the animal body. For the present purpose it will suffice to say that the system recognizes a knowledge of the chemical composition of feeding stuffs employed. The proximate principles of a feeding stuff are as follows:

1. Protein (albumin, casein, fibrin, gluten, amides, etc.)
2. Fat (ether extract).
3. Nitrogen—free extract (sugar, starch, gum, pectin, etc.)
4. Fiber (cellulose).
5. Ash (mineral matter).

In addition to the chemical composition, the digestibility of the various nutrients must be known before a proper ration can be made from a given number of feeding stuffs. Generally the digestibility of a nutrient in a given feeding stuff is expressed by the percentage of the same digested, as determined by actual digestion experiments. This percentage is called the *digestion coefficient,* and holds good in calculating the digestibility of the nutrient in all other samples of the same feeding stuff. For instance, if a sample of wheat bran shows upon analysis to contain 15 per cent. of protein, and if the digestion coefficient of protein in bran had been found by direct experiment to be 80, in order to calculate the amount of digestible protein in 100 pounds of the bran, the percentage, 15, is multiplied by 80 and divided by 100, which gives 12 pounds of digestible protein in 100 pounds of the bran.

The digestion coefficient of the same nutrient varies greatly in different feeding stuffs; thus, while it is 80 in wheat bran, it is 39 in oat hulls, and only 17 in corn cobs. From this it will be seen that arbitrary mixtures of commercial feeding stuffs operate to the disadvantage of the feeder, because the digestion coefficients of such unknown mixtures have never been determined. The consumer is, therefore, at a loss to calculate the amount of digestible protein, fat and carbohydrates in such mixtures, with any degree of accuracy. A guaranty of the amount of protein, fat, etc. in feeding stuffs of this kind does not solve the whole problem, although it gives the purchaser some protection against wholesale frauds.

It is evident from the above considerations that concentrated or commercial feeding stuffs, which alone have come under state control, should be sold under their proper names, without any unnecessary admixture with other materials. The state could do no greater service to the purchaser of commercial feeding stuffs than to correct, as far as possible, the growing evil of throwing upon the market mixtures of all kinds. This is especially true when the practice allows a high-grade feeding stuff to be mixed with inferior and indigestible by-products, as oat hulls and corn cobs.

DISCUSSION OF ANALYSES.

Among the limited number of analyses of commercial feeding stuffs thus far made, there will be found eight analyses of *oil meal,* to which special attention should be called. Oil meal is the by-product resulting from the manufacture of linseed oil, and comes into the market in two forms. *Old process* oil meal is obtained by expressing the oil from the crushed seed by hydraulic pressure, and grinding the resulting cake to a meal. *New process* oil meal is produced by extracting the oil from the ground seed by means of a solvent, like naptha. The only difference between the two kinds of oil meal is that the latter has a lower content of fat than the former. Oil meal is one of the oldest and most important of the concentrated feeding stuffs. The analyses show not only that the commercial articles are equal to the guaranty, but also that they are free from adulterations of any kind.

The analyses of *malt sprouts* and *brewers' grains* show that these feeding stuffs are equal to the guaranty and pure. They are both rich in protein, and can be well employed to raise the protein content of a ration.

Germ Meal is the ground germ of corn grain after the oil has been expressed, and is a by-product obtained in the manufacture of glucose and starch. The analysis shows that it is fully equal to the claims, that it has a high content of both protein and fat, and would, therefore, be useful in feeding, in connection with roughage poor in these nutrients.

Gluten feed and *gluten meal* are also by-products obtained in the manufacture of starch and glucose from corn. They are concentrated feeding stuffs, rich in protein, and comparatively low in fiber. They are useful in supplying protein for making a proper ration. The analyses show that they are equal to the guaranty and pure.

The *oat feeds, oat* and *corn feeds,* etc., are equal to the guaranty, it is true, but the uniformly high content of fiber with a low content of protein and fat, shows that in their preparation oats have been replaced by oat hulls or corn cob meal. This is especially true of those samples where the content of fiber exceeds 20 per cent. of the feeding stuff. In food value these feeding stuffs are about equal to poor timothy hay, and fall below good hay.

The law to regulate the sale of commercial feed stuffs in Ohio will be found on last pages of this report. W. W. MILLER,

Secretary.

TABULATED ANALYSES OF COMMERCIAL FEED STUFFS FOR THE YEAR ENDING DECEMBER 31, 1904.

All analyses are made by Prof. H. A. Weber, Ohio State University, Columbus, Ohio, Official Chemist.

Record No.	Name of Feed Stuffs and Address of Manufacturer.	Claimed and Found	Crude Protein. Per ct.	Crude Fat. Per ct.	Crude Fiber. Per ct.	Record No.
1	**Hominy Feed.** The American Hominy Co., Indianapolis, Ind	Claimed. Found.	10.26 10.28	8.70 5.60	3.84 2.44	1
2	**Victor Corn and Oat Feed.** The American Cereal Co., Chicago, Ill	Claimed. Found.	9.00 8.58	4.00 3.59	10.00 11.95	2
3	**Green Diamond Hominy Feed.** Chapin & Co., St. Louis, Mo	Claimed. Found.	9.00 9.18	7.00 6.89	7.00 3.85	3
4	**Blatchford's Calf Meal.** J. W. Barwell, Waukegan, Ill	Claimed. Found.	25.00 22.31	5.00 4.01	4.46 5.18	4
5	**Strictly Pure Old Process Oil Meal.** The Metzger Seed and Oil Co., Toledo, Ohio	Claimed. Found.	30.00 30.61	5.00 6.83	8.00 9.39	5
	Biles' Fourex (XXXX) Grains. The J. W. Biles Co., Cincinnati, Ohio	Claimed. Found.	33.00 34.51	11.00 15.40	16.00 12.37	6
7	**Quaker Dairy Feed.** The American Cereal Co., Chicago. Ill	Claimed. Found.	14.00 13.38	3.50 4.28	15.00 20.12	7
8	**Buffalo Gluten Feed.** The Glucose Sugar Refining Co., Chicago, Ill	Claimed. Found.	27.00 24.15	3.00 2.36	8.00 7.72	8

9	**Schumacher Stock Feed.**	Claimed.	13.00	5.00	9.50	
	The American Cereal Co., Chicago, Ill.	Found.	10.71	3.09	8.55	9
10	**Old Process Oil Meal.**	Claimed.	32.00	5.50	....	
	The Mansfield Linseed Oil Co., Mansfield, Ohio.	Found.	32.15	8.90	11.30	10
11	**Union Grains, Biles' Ready Ration.**	Claimed.	24.00	7.00	7.00	
	The J. W. Biles Co., Cincinnati, Ohio	Found.	25.37	6.60	8.30	11
12	**Chicago Gluten Meal.**	Claimed.	37.00	2.50	2.00	
	The Glucose Sugar Refining Co., Chicago, Ill.	Found.	32.80	4.39	2.20	12
13	**Cream Stock Feed.**	Claimed.	10.80	3.50	8.50	
	The Cream of Oats Co., Ltd., Warren, Ohio	Found.	7.88	3.09	17.80	13
14	**Germ Oil Meal.**	Claimed.	24.00	10.00	9.00	
	The Glucose Sugar Refining Co., Chicago, Ill.	Found.	21.44	9.25	11.25	14
15	**Boss C. & O. Feed.**	Claimed.	9.00	4.00	11.00	
	The Great Western Cereal Co., Chicago, Ill.	Found.	10.06	3.63	11.50	15
16	**Old Process Oil Meal.**	Claimed.	32.00	5.00	....	
	The American Linseed Co., New York, N. Y	Found.	35.44	7.15	8.85	16
17	**Horse Feed.**	Claimed.	12.00	4.50	9.00	
	The H. O. Company, Buffalo, N. Y	Found.	13.56	4.50	8.53	17
18	**Oil Meal.**	Claimed.	32.00	5.50	....	
	Thompson & Co., Allegheny, Pa	Found.	32.69	8.29	8.42	18
19	**Sucrene Horse Feed.**	Claimed.	13.50	4.00	14.20	
	The American Milling Co., Chicago, Ill.	Found.	18.38	2.89	12.16	19
20	**Sucrene Dairy Feed.**	Claimed.	16.50	3.50	14.18	
	The American Milling Co., Chicago, Ill.	Found.	18.38	2.95	11.63	20
21	**Corn, Oat and Barley Feed.**	Claimed.	13.00	5.00	9.50	
	The American Cereal Co., Chicago, Ill.	Found.	10.06	3.30	11.55	21
22	**Buckeye Wheat Feed.**	Claimed.	17.75	4.70	7.00	
	The American Cereal Co., Chicago, Ill.	Found.	15.30	4.54	8.12	22

TABULATED ANALYSES OF COMMERCIAL FEED STUFFS—Continued.

Record No.	Name of Feed Stuffs and Address of Manufacturer.	Claimed and Found	Crude Protein.	Crude Fat.	Crude Fiber.	Record No.
			Per ct.	Per ct.	Per ct.	
23	**Ajax Flakes.**	Claimed.	30.00	10.00	14.00	
	Julius Marcus, New York, N. Y.	Found.	32.37	13.69	14.00	23
24	**Warner's Gluten Feed.**	Claimed.	27.50	3.00	....	
	The Warner Sugar Refining Co., Waukegan, Ill	Found.	24.50	2.10	8.00	24
25	**Flint Gluten Feed.**	Claimed.	25.00	3.00	7.00	
	Chapin & Co., St. Louis, Mo.	Found.	28.00	3.95	7.27	25
26	**Mueller's Molasses Feed.**	Claimed.	19.00	2.73	....	
	E. P. Mueller, Milwaukee, Wis.	Found.	19.14	2.27	11.92	26
27	**Corn, Oats and Barley Chop.**	Claimed.	7.00	3.96	12.96	
	The Imperial Grain and Milling Co., Toledo, Ohio.	Found.	7.44	3.00	11.59	27
28	**Royal Oat Feed.**	Claimed.	7.60	2.80	22.00	
	The Great Western Cereal Co., Chicago, Ill.	Found.	7.44	2.94	23.30	28
29	**Blood Meal.**	Claimed.	85.00	0.02	....	
	The Armour Fertilizer Works, Chicago, Ill.	Found.	85.31	0.44	....	29
30	**Poultry Bone.**	Claimed.	25.00	5.00	......	
	The Armour Fertilizer Works, Chicago, Ill.	Found.	24.94	0.60	....	30
31	**No. 2 Chop Feed.**	Claimed.	10.81	6.02	9.72	
	The Commercial Milling Co., Cleveland, Ohio.	Found.	8.21	3.48	10.58	31

32	**Excelsior C. & O. Feed.**	Claimed.	9.00	4.20	10.00	
	The Great Western Cereal Co., Chicago, Ill.	Found.	8.75	6.25	9.79	32
33	**Corn Protegran.**	Claimed.	33.00	8.50	....	
	The Dewey Brothers Co., Blanchester, Ohio.	Found.	32.81	10.90	12.80	33
34	**Merchants' High Grade Dairy Feed.**	Claimed.	30.00	10.00	14.00	
	Julius Marcus, New York, N. Y.	Found.	35.00	13.59	12.20	34
35	**Old Process Oil Meal.**	Claimed.	29.00	5.00	11.00	
	Chapin & Co., St. Louis, Mo.	Found.	31.94	6.79	9.55	35
36	**No. 2 Chop.**	Claimed.	7.13	3.31	13.08	
	The Imperial Grain and Milling Co., Toledo, Ohio.	Found.	7.44	3.40	12.75	36
37	**Royal Corn and Oat Chop Feed.**	Claimed.	8.28	3.12	....	
	Jacob Beck & Son, Ltd., Detroit, Mich.	Found	8.31	5.10	5.81	37
38	**Vim Oat Feed.**	Claimed.	7.50	2.75	25.00	
	The American Cereal Co., Chicago, Ill.	Found.	8.31	2.69	22.82	38
39	**American Poultry Food.**	Claimed.	14.00	4.50	5.50	
	The American Cereal Co., Chicago, Ill.	Found.	14.44	6.49	4.50	39
40	**Boss Egg Food.**	Claimed.	20.00	4.00	7.00	
	James S. Warner, New Philadelphia, Ohio.	Found.	19.69	5.00	5.59	40
41	**Perfection Stock Food.**	Claimed.	18.64	7.72	10.13	
	The Perfection Stock Food Co., New Philadelphia, Ohio.	Found.	20.56	6.58	9.20	41
42	**Perfection Poultry Panacea.**	Claimed.	18.20	4.87	2.31	
	The Perfection Stock Food Co., New Philadelphia, Ohio.	Found.	19.25	3.25	1.46	42
43	**Meat Meal.**	Claimed.	50.00	10.00	....	
	The Armour Fertilizer Works, Chicago, Ill.	Found.	45.06	10.40	0.95	43
44	**Linseed Oil Meal.**	Claimed.	36.00	1.00	11.00	
	The American Linseed Co., Chicago, Ill.	Found.	35.88	2.70	9.35	44
45	**Hominy Feed.**	Claimed.	11.02	7.70	....	
	Suffern, Hunt & Co., Decatur, Ill.	Found.	10.94	8.80	4.35	45

TABULATED ANALYSES OF COMMERCIAL FEED STUFFS—Concluded.

Record No.	Name of Feed Stuffs and Address of Manufacturer.	Claimed and Found	Crude Protein. Per ct.	Crude Fat. Per ct.	Crude Fiber. Per ct.	Record No.
46	**Tiger Gluten Feed.**	Claimed.	27.50	2.75	7.50	
	The St. Louis Syrup and Preserving Co., St. Louis, Mo.	Found.	26.69	3.80	7.65	46
47	**Pure Linseed Meal.**	Claimed.	34.00	8.00	8.00	
	The Robert B. Brown Oil Co., St. Louis, Mo	Found.	32.81	8.38	8.13	47
48	**Beef Scraps.**	Claimed.	60.00	12.00	....	
	The Armour Fertilizer Works, Chicago, Ill.	Found.	53.38	11.84	3.28	48
49	**Hominy Feed, Regular.**	Claimed.	10.66	8.27	....	
	The Toledo Elevator Co., Toledo, Ohio.	Found.	9.63	7.04	4.61	49
50	**Star Feed.**	Claimed.	9.88	7.31	....	
	The Toledo Elevator Co., Toledo, Ohio	Found.	9.63	6.76	4.83	50
51	**Old Process Ground Linseed Cake.**	Claimed.	32.50	5.50	6.00	
	The Midland Linseed Co., Minneapolis, Minn.	Found.	32.81	7.65	10.31	51
52	**Feeding Tankage.**	Claimed.	43.00	10.00	....	
	The Armour Fertilizer Works, Chicago, Ill.	Found.	39.80	12.37	3.43	52
53	**Blatchford's Sugar and Flax Seed.**	Claimed.	28.25	11.25	5.50	
	J. W. Barwell, Waukegan, Ill.	Found.	26.25	9.75	6.82	53
54	**F. P. C. Chick Manna.**	Claimed.	14.01	4.75	....	
	F. P. Cassel, Lansdale, Pa.	Found.	13.56	4.83	2.27	54

55	**P. & W. Chop.**	Claimed.	13.00	5.00	....	
	Peterson & Wright, Akron, Ohio	Found.	10.93	4.50	14.08	55
56	**Chop Feed.**	Claimed.	....	....	....	
	The Star Mill Co., Racine, Ohio	Found.	11.81	4.22	5.36	56
57	**Peerless Stock Food No. 1.**	Claimed.	30.00	11.00	5.00	
	The Canton Fertilizer and Chemical Co., Canton, Ohio	Found.	30.19	11.79	3.61	57
58	**Dried Brewers' Grains.**	Claimed.	....	....	....	
	The Cleveland and Sandusky Brewing Co., Cleveland, Ohio	Found.	20.56	4.78	12.45	58
59	**Malt Sprouts.**	Claimed.	....	....	....	
	The Cleveland and Sandusky Brewing Co., Cleveland, Ohio	Found.	26.25	1.43	12.41	59
60	**Jersey Mixed Feed.**	Claimed.	12.05	3.20	16.00	
	The Indiana Milling Co., Terre Haute, Ind.	Found.	12.25	2.76	17.01	60

LIST OF COMMERCIAL FEED STUFFS PROPERLY LICENSED

And offered for sale in Ohio in 1904, but samples of which were not found by the Secretary or Deputies on the markets, hence they have not been analyzed.

MANUFACTURERS' CLAIMS.

Address of Manufacturer and Name of Feed Stuffs.	Crude Protein.	Crude Fat.	Crude Fiber.
	Per cent.	Per cent.	Per cent.
The American Stock Food Co., College Corner, Ohio.—**American Stock Food**	....	....	....
The Canton Fertilizer and Chemical Co., Canton, Ohio—**Peerless Stock Food No. 2**	20.00–25.00	4.00– 6.00	3.00– 6.00
The Continental Cereal Co., Peoria, Ill.—**Continental Gluten Feed**	35.00	12.50	13.00
The National Starch Co., Chicago, Ill.—**Queen Gluten Feed**	26.00	3.00	10.00

LAW TO REGULATE THE SALE OF COMMERCIAL FEED STUFFS IN OHIO.

SECTION 1. Every manufacturer of commercial feed stuffs, and every person, firm or company that shall sell, offer for sale or expose for sale the same in this state, shall furnish with each car or other amount shipped in bulk, and shall affix to every package of such commercial feed stuffs, in a conspicuous place on the outside thereof, a plainly printed statement clearly and truly certifying the number of net pounds in the shipment, or in each package containing such commercial feed stuffs, the name or trade mark under which it is sold, the name of the manufacturer or shipper, the place of manufacture or the place of business of the shipper and a chemical analysis stating the percentages it contains of crude protein (allowing one percentum of nitrogen to equal six and one-fourth percentum of protein), crude fat and crude fiber.

SEC. 2. Before any commercial feed stuffs shall be sold or offered for sale in Ohio, the manufacturer, shipper, company, firm or person who causes it to be sold or offered for sale, within the state, shall file with the Secretary of the Ohio State Board of Agriculture a certified copy of the certificate referred to in Section 1 of this bill, and shall deposit with said Secretary a sealed glass jar or bottle containing not less than one pound of the said stuffs, sold or offered for sale, accompanied by an affidavit that it is a fair average sample.

SEC. 3. The manufacturer, importer or agent of any commercial feed stuffs, shall pay annually, on or before the first day of March, a license fee of $25.00 on each brand, for the privilege of selling or offering for sale within the state, said fee to be paid to the Secretary of the Ohio State Board of Agriculture, provided: that whenever the manufacturer or importer shall have paid the license fee herein required, any person, company or firm selling, or offering for sale, any commercial feed stuffs, or acting as agent for such manufacturer or importer, shall not be required to pay the fee named in this section. On receipt of proper application for license, with license fee, the Secretary of the Ohio State Board of Agriculture shall issue license for the current year; all licenses shall expire with the calendar year, December 31st.

SEC. 4. The term "commercial feed stuffs" as used in this act shall include linseed meal, cotton seed meal, pea meal, cocoanut meal, rice meal, gluten meal, gluten feeds, dried brewers' grain, malt sprouts, hominy feeds, cerealine feeds, oats feeds, mixed feeds and all material of similar nature; but shall not include hay, straw, whole seeds, the mixed meals made directly from the entire grains of wheat, rye, barley, oats, Indian corn, buckwheat and broom corn, wheat bran or middlings not mixed with other substances, but sold separately as distinct articles of commerce, and pure grains mixed and ground together.

Sec. 5. All analyses of commercial feed stuffs, sold within the state shall be made by, or under the direction of, the Secretary of the Ohio State Board of Agriculture, and paid for out of the funds arising from license fees provided for in Section 3 of this act. At least one analysis of each brand of commercial feed stuffs shall be made annually, if samples can be found in possession of agents, dealers, or consumers.

Sec. 6. Any manufacturer, company, firm, agent or dealer, who shall sell or offer for sale, or expose for sale, any commercial feed stuffs in this state, without complying with the requirements of this act, or shall sell or offer or expose for sale, any commercial feed stuffs which contain a smaller percentage of constituents than it is certified to contain, shall upon conviction be fined not more than one hundred dollars for the first offense, and not more than two hundred dollars, for each subsequent offense, and the offender in all cases, shall also be liable for damages sustained by the purchaser of such commercial feed stuffs; provided, however, that a deficiency of two percentum of crude protein or two percentum of crude fat, or an excess of two percentum of crude fiber, claimed to be contained shall not be considered as evidence of fraudulent intent.

Sec. 7. Any person who shall adulterate any kind of meal, ground grain, bran or middlings with any other substance whatever, for the purpose of sale shall plainly mark or brand each and every package with a correct statement as to the proportions and kind of adulterant or adulterants used therein. The penalty for violating this section shall be a fine of not less than ten dollars or more than two hundred dollars for the first offense, and not less than twenty-five dollars or more than five hundred dollars for each subsequent offense.

Sec. 8. The Secretary of the Ohio State Board of Agriculture, or any person deputized by him, is hereby authorized to draw from any package or bulk quantity of commercial feed stuffs exposed for sale, or found in possession of any purchaser, in any county in Ohio, a quantity not exceeding two pounds which shall be for analysis, as provided in Section 5 of this act.

Sec. 9. All suits for the recovery of fines, under the provisions of this act, shall be brought by the Secretary of the Ohio State Board of Agriculture, in the name of the State of Ohio. All prosecutions under this act shall be governed by Sec. 3718*a* of the Revised Statutes of Ohio and said section shall control all such prosecutions.

Sec. 10. The Secretary of the Ohio State Board of Agriculture shall publish, annually, a correct report of all analyses made and all licenses issued for the sale of commercial feed stuffs, together with a statement of all moneys received on account of license fees and all expenditures made in connection with securing samples, and having the same analyzed; and any surplus shall be placed to the credit of the agricultural fund.

The above is a correct copy of the law regulating the sale of Commercial Feed Stuffs in Ohio, now in force.

W. W. Miller, *Secretary.*

Report of the Proceedings

OF THE

STATE FARMERS' INSTITUTE

Held Under the Auspices of the Ohio State Board of Agriculture, January 10 and 11, 1905.

TUESDAY MORNING, January 10, 1905.

The State Farmers' Institute was called to order in the hall of the House of Representatives, State House, at 10 o'clock a. m., by Hon. T. E. Cromley, member of the Ohio State Board of Agriculture, who explained that Secretary W. W. Miller could not be present to open the State Institute, because of an unforeseen and important business matter that required his immediate personal attention.

In introducing the presiding officer, Mr. Cromley said: "I desire to congratulate you on the large attendance that we have at this opening session. I think it shows heart interest. The sessions will be interesting, and for these two days this hall is yours. The speakers are here to instruct and interest you, and you are at liberty to bring out anything that you can from the papers that are presented to you. We desire that each of you shall feel right at home; that this is your meeting, and that you are to derive all of the benefit possible. I will now present to you Mr. A. L. White, of Muskingum County, as your presiding officer. Mr. White." (Applause.)

Mr. A. L. White, President State Farmers' Institute:

"We have with us this morning the Cecilian Ladies' Quartette, who will now sing for us."

Music by the Cecilian Ladies' Quartette.

PRESIDENT WHITE'S ADDRESS.

Brother and Sister Farmers, I cannot say at all how it came to pass that I was nominated and elected to act as your president. I feel that I cannot play well my part, but if you will do a large part of the work, possibly we may get through. I think that I rightly appreciate the honor of the place that you have given me. I did not at first, but after consideration I felt indeed that I would rather have this place than be appointed by President Roosevelt as Ambassador to Ireland. (Laughter.)

In coming from our county city last night, I had not started far until I found that I was alone upon the great suburban car, and in a twinkle it flashed upon me that I was president of the State Farmers' Institute, and they had run out one of their most elaborate cars, decorated, to bring me over, and the consideration of that fact helped me to while away the midnight hours, and I trust, good farmers, that the day is not far off when the railroads will fight with each other for the honor of bringing the delegates and farmers to our great state meeting.

I have in my possession year books and agricultural reports dating back as far as the year 1853. In looking over them I have found that each man who came forward as president first spoke well of our nation, our state, the work upon the farm, at the university, the institute and all these things that have a bearing toward the advancement of agriculture, but time will only permit me this morning to invent a few words concerning our nation, the greatness of our state, the work in field, farm and orchard. However, may I say that one of the encouraging features of the present time is the harmony of nations. True, Japan and Russia cannot testify to that, but in a general way there never existed as now at this time the harmony of nations. It is not yet a fortnight since Professor Charles Wolstein, of the University of Cambridge, sat with our president, and the object of his mission in coming to our shores was to ask his consent, with other nations, Germany, France, Italy and England, in the great work of excavating where scientific men are certain lie treasures of indigo grander than the world has ever yet seen.

It is pleasant for us to think of the wonderful resources of our country. Almost in any direction which you may point are millions and millions of acres yet untouched. The untouched resources of Ohio are wonderful to consider. Take Ohio with her forty-one thousand square miles, and take the population of our great country, nearly eighty millions, and if you will divide Ohio into little farms of an acre and a half each—and there are many people in Ohio right comfortable on farms no larger than this—and place upon each farm a family of five, and would to the Lord there were more families of five in our great country, and they would be more popular, instead of the great popularity of the American poodle dog (applause), the labor problem would then be solved. But take the population of our great country, divide it into families of five, and each family would have a home in our great state. I cannot say that our resources will be fully developed in a dozen years or in ten dozen years. One of the reasons why our country is great, I believe, is because of our power of absorption, or as a cattle and stock raiser I would say power of digestion and assimilation. Whatever comes across our borders becomes a valuable part of ourselves. It is not so the whole world round. You take, for instance, a hundred German people, the hardest people in the whole world to change in their ways; take one hundred of them today, place them anywhere in an European nation, visit them in one hundred years, and they have not changed materially from the way in which they started. But take one hundred German people, bring them upon our shores and in three days those men and women have taken a valuable place among our citizens, and the children of those German people go marching home from their schools, and as they march they bear the American flag and sing "My Country, 'Tis of Thee, Sweet Land of Liberty." They have the power of absorption, and that is why our nation and our state are great and grand.

Would it be wise for us this morning just to take a moment to look about us to see from whence our greatness comes, and our advancement in the world, and all things that are valuable, as well? One of the reasons why our country is good and great is because we have been the producers of men. Our nation and our state; there is nothing greater, there is nothing grander in the whole world than a man. The pure and higher manhood is higher than that of party fraternity. A man, a true man in the true sense of the word, although he stand alone and stand for the right, there is no greater or grander creature. Should I talk of patriots? It is not necessary so long as we have men. Have you ever seen a man who was called a patriot but his only evidence of his patriotism was his shouting for the old flag, while with his other hand he took from the public treasury an unjustly rich reward? That man has no more patriotism than would fill a last year's humming bird's nest. You say there is no demand for patriotism in these times of peace, but the man who is a patriot in the time of peace is a greater and grander man than he who can face the cannon and hear unmovedd the hiss of the minie ball, the man who, in all of life's experiences can stand for the right is a greater and grander man than he who is the patriot in time of war.

Will you go with me a step further in viewing the foundation upon which those things which are valuable to our country rest? I am sure you will go, and you will encourage me. Out yonder (pointing toward the Ohio State Fair grounds) is one of the grandest fairs that the old flag floats over or the sun shines upon. It is here we have, we believe, one of the best fairs held in the Union. This ground and this fair have been made what they are by the labor of twelve good men. A little to the west part, I would say, of that fair ground is a cottage, a one story structure. It is old and worn, and so dear to the hearts of our people that each man and woman seeing it would carry away as a souvenir a splinter of it; so our State Board, in its wisdom, placed about it a case of glass and stone. It is the birthplace of U. S. Grant, one of the grandest men—soldier, statesman, patriot—that the world has ever known. While that man had within his soul the full fire of manhood he arose one day in all his princely majesty and he said, "Our country is indebted to religion for all the civilization that she has ever been permitted to have, and from that source she may look for it in the future." And while we are thinking of this there comes the sound across the ocean, the thought of William E. Gladstone, and his spoken sentiment coincides exactly with that of our honored brother, U. S. Grant.

You remember the woman who sat in the little church where you worshiped when you were a boy beside her; a little woman, and you knew her right well, for you sat beside her sometimes and heard the soft pleadings from her voice. Yes, you knew her well because she was your mother and mine. The sentiments of her great heart correspond exactly with that of Grant and Gladstone.

Have there been any hindrances to the great work of agriculture during the past year? Of that I have little to say. The charge has been made of unfaithfulness to trust and duty. This is a very grave one, and should never have been made only after the most careful consideration. In this great country of ours we are in the exercise of our highest civil rights, each man being himself a sovereign. It is because the majority have been inactive, and are only brought out of their inactivity or dormant state by the action of those who are willing to work. However, let me say this: He or she who would destroy the work of agricltrue is as foolish as the child who would thrust a dagger into the bosom of its mother, that mother being its only support. James G. Blaine said that there is no greater part of this great country than agriculture. Without it all else fails. Ships would rot in the harbor, grass would grow in the most populous streets if agriculture were destroyed.

Our coming together today is not without its dark shadow. If down there we take one of these streets, and over here another, and over that we would spread rich trimming of silk and velvet, and then on that the flowers banked up high, and then over all we allow the sweet stars and stripes to wave, that action would only be a vain expression of the love we have for those two grand men, Brothers Brigham and Ellis. In other years they sat with us as councilors and great helpers. Today we know that in the great and glorious beyond they sit beneath the tree of life and wander through bright fields. They were men, men in the truest sense of the word. They were self-made men, but unlike most of our self-made men they did not exhaust all their energies in the making of themselves, but they gave to you, and to me, and to the agricultural world, and to the whole world, treasure, rich, priceless, immortal.

Brothers, what is your wish as to what the character of this Institute shall be? Shall it be an ordinary one, or shall it be up to the average, or shall it be a record breaker in every respect? It is for us to say today. Like life, and like anything, in fact, with which we may have experience, it will be what we make it. This Institute may be made like the ring of a bell, joyful, with glad note, that which cheers the heart, or it may be mournful, unsatisfying, discouraging.

Have you heard of the Boston bells, or of the Boston merchant rather, who kept bells for sale? He had only one variety. A committee came to him one day from the church and said they wanted to purchase a bell. "We want one to be strong in tone and clear, which will cause the heart of saint and sinner to pause and consider." Said the merchant, "We have bells of that character," and he brought forth one, and he rung it with motion slow and mournful, and it awakened thoughts of the great eternity. Said the committee, "That will just suit us. What is your price?" Said he, "Seventy-five dollars." They said, "We will take it," and they paid him for it.

They scarcely had gone their way when a jolly farmer came in and he said, "I want to purchase a bell, one clear, good tone, that will cause a fellow to have an appetite for his dinner." The Jewish member of the firm was on hand and he said, "We have some bells; they are very good bells; come and see them." He produced the same bell and he said, "This bell is clear in tone and rich and soft," and thereupon he took up that bell and rung it back and forth with a good, clear sound, and he said, "That bell would make a fellow bust himself to get to a good dinner." He said, "I sell that bell to my brother last week; he is dead now; he don't need it." He said, "I sell it to him for seventy-five dollars. If you want it you can have it for seventy-four dollars and ninety-eight cents." Brother, the ringing of the bell is yours. Let us ring it with no uncertain sound.

The President: In traveling in the northern part of the state last year, or perhaps the year before, I met a man whom I learned to hold in high esteem. He is with us today, Mr. A. F. Burgess, and his subject is, "Spraying for Control of Orchard Pests."

ADDRESS BY A. F. BURGESS.

In order to grow successful fruit crops the orchardist must carefully study the many problems which are connected with his business. He must understand the natural advantages, as well as the disadvantages, of his particular locality, in order to avoid mistakes and to secure the best results for his efforts. Continued success cannot be expected unless the most improved measures are adopted in dealing with the many problems which he encounters. The orchard must be managed in such a way as to produce crops of perfect fruit without reducing the vitality of the trees or exhausting the fertility of the soil. If any of the essential conditions for the best development of the crop is overlooked, loss is sure to follow.

One of the chief causes for the loss of vitality of trees is due to the attacks of insect pests and plant diseases and the annual losses resulting from them are enormous. The spraying of orchards for the control of these pests has been practiced so successfully by the leading fruit growers of this country that it would seem entirely unnecessary, at such a meeting as this, to present facts to show that it is a profitable and essential undertaking.

Conditions in Ohio have not developed to such an extent that extensive spraying operations are attempted for the protection of other property, but the time will come when serious attention must be given to protecting the trees and ornamental shrubbery in cities and towns from the increasing number of pests that attack them, and when owners realize the importance of this work active spraying will be undertaken. The San Jose scale is already doing serious damage to fruit and ornamental trees and shrubs in many cities in this state, and during the past year the elm leaf beetle, which is very destructive in the eastern states, has been found in the city of Dayton. These facts simply indicate the situation and bear out the assertion that spraying will have more general application in the future.

The pests that the fruit grower must combat are legion, and, as most of them exist in several different stages, which are widely dissimilar, it is often difficult to detect the particular one that is doing the injury. In many cases comparatively simple remedies may be applied, and the pest is sometimes of such a nature that spraying would be absolutely useless. For instance, it has been found impossible to combat peach yellows or pear blight, both of which are diseases, by means of spraying, while black knot that attacks the plum and cherry can be controlled by cutting off and burning the affected parts. Such diseases as rot, mildew, scab and leaf spot, which affect many horticultural crops, can be controlled by spraying, if it is applied at the proper time. Bordeaux mixture is the standard fungicide, and is an invaluable remedy for plant diseases.

Among the insects of the orchard, two distinct types must be recognized; namely, those that feed upon the tissue of the host and those that suck the sap. Poison sprays are of little value for destroying the latter, because they do not eat the tissue, and no practical means have yet been discovered for poisoning the sap of the plant in order to destroy these pests. They must be destroyed by the application of a contact insecticide. This class of insects has been responsible for the preparation of all manner of remedies to be applied to the trunks of the trees, in order that they may be absorbed by the sap, and thus destroy pests of every description. Truly marvelous results have been obtained, according to the stories told by the agents for these delusions, and they have been remarkably successful as a means of securing revenue for the owners. Thousands of dollars have been obtained from the public in this manner.

It must be understood, however, that insects exist in several distinct stages, some of which it is wholly impractical to combat, and that the entomologist must often work out the complete life cycle of the pest before a satisfactory remedy can be advised. Such work takes time and often requires patient study and observation, and, in order to facilitate such investigations, large sums of money are spent annually by the Federal Government and State institutions.

The essential qualities of a good insecticide are that it will kill the insects without injuring the trees, and that it is cheap and can be easily applied. This statement, which is apparently simple in itself, covers the entire field of insecticidal investigations. Poisons, such as paris green, or better still, arsenate of lead, which is sold under the trade name of disparene, should be used against insects that eat the foliage or the fruit. The former, if used, should be applied at the rate of one pound to one hundred and fifty gallons of water, and if the sample is of good quality a greater strength can be used without injuring the foliage. The latter is a more satisfactory poison, although more expensive, and it is usually applied at the rate of three pounds to fifty gallons of water. Stronger solutions do not injure foliage. It is advisable to add bordeaux mixture to the poison spray in order to check fungus diseases. Summer treatment for sucking insects, such as plant lice, should consist of diluted kerosene emulsion or whale oil soap mixture, used at the rate of one pound to four gallons of water. As a winter wash for San Jose scale, the lime and sulfur wash has no equal. This is made by boiling together fifty pounds of sulfur with fifty pounds of stone lime, while the latter is slacking, and diluting the mixture with water to make one hundred and fifty gallons of wash. Boiling must continue for one hour, or until a dark, yellowish-brown liquid results.

Most orchard crops have their distinctive pests, hence it is impossible to give an ironclad rule for treating all kinds of trees. Some fruit growers consider only the result of the work of orchard pests, and do not pay enough attention to ascertaining the cause of the trouble. In order to spray intelligently, it is necessary to know the character of the pest, or pests, which do the damage, so that proper remedies can be applied at the right time. If an apple orchard is sprayed with poison when the leaves are small, in order to destroy the canker worm, it must not be expected that this will prevent the fruit from becoming wormy, as this is caused by the codling moth, an entirely different insect, and more treatments are required to hold it in check.

Among the pests that are doing the greatest damage in Ohio orchards may be mentioned the San Jose scale, codling moth, plum curculio, canker worm, peach borer, peach yellows, pear blight, peach leaf curl, apple scab, plum rot and shot-hole fungus that attacks the leaves of the plum and cherry. Many other pests are seriously injurious locally, and special measures must be taken to hold them in control. All of these pests, except the peach borer and such diseases as have been previously referred to, can be controlled by systematic spraying.

The attention which any fruit grower pays to spraying is an index of the general care taken of his orchard, for the reason that if he is sufficiently interested to spray thoroughly at the proper time, regardless of other farm work which appears to be necessary, he will also give careful attention to the other orchard operations.

Ohio is one of the largest fruit growing states of the Union. According to the census of 1900 the value of her fruits was $8,901,220, and this amount was exceeded by only three states, namely, California, New York and Pennsylvania. In apple production she was exceeded only by New York and Pennsylvania, and yet Ohio is essentially a state of small orchards. As far as is known to the writer, no great five hundred or one thousand acre commercial orchards exist.

From the agricultural statistics reported by county auditors, and published by the Ohio Department of Agriculture, it will be found that from 1899, the year that the census was taken, to 1903, the area planted to fruit has decreased seventy-four thousand one hundred and forty-one acres, and of this shrinkage sixty-six thousand seven hundred and forty-three acres have been devoted to growing apples. These figures show that rapid decadence of small orchards throughout the state, and the following summary of reports received from the Assistant Inspectors of the Division of Nursery and Orchard Inspection during the spring of 1904, relative to the amount of spraying that was being done by owners of small apple orchards in many different parts of the state, will serve to justify the statement already made that spraying is an index of the general care that is given orchards. Of three hundred and six owners that were interviewed, only nineteen per cent. sprayed regularly, and they were growing good crops. Of those remaining, sixty-seven per cent. did not spray, six per cent. had sprayed once and failed, and a similar percentage of growers had sprayed with satisfactory results in the past, but now neglect to do so. Unsprayed orchards were in all stages of decline and it was evident that some of them would be cut down before the end of the season.

The future of orcharding in Ohio will depend on systematic spraying, coupled with careful planting and cultural methods, and will be governed by the great law of the "survival of the fittest." Small growers must be interested by educational means and demonstration work in the field. The best scientific information obtainable can be secured by any farmer, for the asking, from the great National and State Agricultural Institutions, but success in carrying on the actual operations depends upon the individual.

The President: I have been instructed to insist that each person in speaking arise, give his name and the county he is from, so that the report will be made intelligible when written out.

Mr. A. H. Judy, Darke county: Did I understand you to say that by spraying you could prevent pear blight?

Mr. Burgess: No, sir. There is no way of preventing pear blight. As soon as the blight appears on the trees, the limbs should be cut out below the blighted portion and burned at once.

Mr. Dobbins, Greene county: How many times would you advise us to spray?

Mr. Burgess: I would advise spraying at least three times, and it would not do any harm to put in an extra spraying, spraying first as soon as the blossoms are falling, while the apple is standing upright with the calyx open. The second spraying apply a week or ten days later. If you apply four sprayings, apply your third spraying ten days or two weeks later, and the fourth spraying between the middle and the last of July, depending on the locality in the state. You should spray a little earlier in southern Ohio than in northern Ohio. The last spraying is for the control of the second brood of the codling moth.

Mr. Lunn, of Warren: What is the pear blight?

Mr. Burgess: The pear blight is a bacterial disease. There is no known remedy.

Mr. Lunn: How is it communicated?

Mr. Burgess: That is a difficult question to answer. It has been, and it is, a very difficult question to settle satisfactorily. It may be communicated by insects. I think some authorities have demonstrated that under certain conditions it can be communicated by insects flying from one tree to another.

Mr. Seeley: I had a small elm tree that I set out in front of my house among other trees to fill a vacant space. The last two years I noticed a little knot come on the leaves, and after a while it resulted in the flying insect, and the idea came that if they stayed there I would spray them at the right time, and it would destroy them. The other elm trees around the house are not affected that way.

Mr. Burgess: The insect which you referred to I presume is a gall insect, a small four-winged fly, which deposits an egg inside of the tissue, and when it hatches, the growth is stimulated. Spraying would not be effective in that case.

Mr. Seeley: How about taking them off; pruning them off?

Mr. Burgess: If you could send me some samples next summer, I would be glad to determine the insect for you.

Mr. Hope, Meigs county: I have quite a large apple orchard, and I would like to ask you about spraying, please. I understand you to say, spray the first time after the blossoms drop. Is that correct, the first time?

Mr. Burgess: Are you troubled with apple scab on your trees?

Mr. Hope: I don't think we are. I am not posted enough to know all of the names and qualities of the insects.

Mr. Burgess: Under your conditions I would recommend that you spray with bordeaux mixture early, before the buds burst, then give a spraying with bordeaux mixture and arsenate of lead as soon as the blossoms fall; the third spraying a week or ten days after. And if you are going to omit any spraying for the codling moth, don't omit the last one in July.

A member: I would like to ask if trees which are threatened with this blight, and are about to be destroyed by this blight, if you would recommend digging them up.

Mr. Burgess: I would recommend digging them up, but I don't think I would want to set trees in their place right away. I would rather put them somewhere else, and not immediately transplant.

Mr. D. T. Blackburn, Scioto county: In our section we are troubled by the peach borer, commonly called. Have you some remedy? It works on the apple.

Mr. Burgess: Did I understand you to say the peach borer works on the apple? Are you not confounding the peach borer with the apple borer?

Mr. Blackburn: No, sir; they are there, and they both work there in our section.

Mr. Burgess: For the peach borer, the best remedy that has been tried is to take out the borers and kill them, or to thrust a wire into the burrow and crush the worms, although some growers have found that where the lime and sulfur wash was used it seemed to deter the adults from depositing their eggs. Now, the same thing might apply to the apple borer. I am not entirely convinced as to the identity of the two species. If you could send me some samples, I would like to have them very much.

The President: What is your treatment of the tree after you remove the borer?

Mr. Burgess: It is well enough to bind the tree up if you could put some clay and bind it around the wound so it would hold. That would be satisfactory. A great many do not do anything more than to pick out the borers.

Mr. U. T. Cox, Lawrence county: I understood you to say that arsenate of lead would not injure the foliage. If I remember, Professor Green has said that he had some trouble in using it. When four or five applications are made, it seems that it injures the leaves and makes them fall.

Mr. Burgess: Didn't he use bordeaux mixture with the arsenate of lead?

Mr. Cox: I guess he did.

Mr. Burgess: If arsenate of lead is used it will not burn the leaves, if the aresnate is used alone without the bordeaux mixture.

Mr. Lowell Roudebush, Clermont county: I have made a few experiments in using arsenate of lead or disparene at the rate of ten pounds to fifty gallons, or one pound to five gallons, and where used alone I have never found any injurious effects on the foliage, and I would agree with Mr. Burgess that either the arsenate of lead was home made or that it was used in connection with the bordeaux mixture, one or the other.

Mr. Peters, Pickaway county: I would like to ask Mr. Burgess if he has any experience in spraying with soda solution instead of the bordeaux mixture? It is something similar to the bordeaux, using blue vitriol and soda. Did you ever have any experience?

Mr. Burgess: I have never had any experience with that. In regard to advertised remedies, I would like to say just one word, and that is, fruit growers should be cautious and adopt them only after they have been tested, and I might add something which I said at a recent meeting of the State Horticultural Society, at Chillicothe, concerning "Con-Sol," remedy for San Jose scale. It has been widely advertised throughout this state, and the eastern states, and in the eastern states, especially, there has been a great deal of it sold. I learned two weeks ago that it is claimed to be a concentrated solution of lime and sulfur wash. I learned, as I say, that it had been tested by the chemists of the Department of Agriculture at Washington, and that it is what it is claimed to be. But it has been tested in the orchards and found that in order to be effective for killing scale you must use one part of the solution to four parts of water. Solution costs one dollar a gallon. That is, every gallon of wash that you use would cost you twenty-five cents. The manufacturer represents that it will be effective for use at the rate of one gallon of solution to forty gallons of water, which would make a very cheap remedy. I just make this suggestion in case any of you are thinking of trying this remedy. I would not advise it.

Mr. Peters: I would also like to ask if there is any objection to the first spraying being made when the trees are in full bloom, instead of just after the bloom has fallen?

Mr. Burgess: Well, there is a question in regard to poisoning the bees, and there is some little difference of opinion in regard to that. I, personally, would wait until the blossoms have fallen. Of course, in spraying a large orchard it often occurs that some varieties have dropped their blossoms while others are in full bloom, and that makes it difficult to spray when they have all dropped their blossoms, but I should prefer to wait until the bloom has fallen.

Mr. Peters: I have not a very large orchard at home, and we have been spraying for several years, and Mr. Stahl, of Quincy, Illinois, has recommended spraying while they are in full bloom. I have done it and had excellent results from it.

Mr. Burgess: You have not injured your fruit, Mr. Peters?

Mr. Peters: No, sir; in fact, I am about the only man around who has had very good fruit.

Mr. Cox, of Lawrence county: I would rather not spray while they are in bloom, but before they bloom, with the bordeaux mixture, and while I am about it I always put in some form of arsenic, to be sure to kill caterpillars that are eating the foliage. In regard to spraying, while they are in bloom, it may kill the blossoms to some extent, and it will knock off a great many of the blossoms. There have been experiments made by a great many of the experiment stations along that line, and in case the tree buds very full, and sets too large quantity of fruit, it will thin the fruit for you. If a man does not spray at all the apple scab will come along and thin them enough.

Mr. Dunlap, of Pickaway county: I would like to ask whether pear blight is more prevalent in rapid growing pear trees on cultivated land, or on land that is not so much cultivated?

Mr. Burgess: I don't know as I could give data as to that. I don't think I have any particular information on that phase of the subject.

Mr. Hinsdale, of Medina county: In the north end of the state we have had a good deal of trouble with twig blight in our apple orchards. Is that identical with pear blight? Is there any remedy for it?

Mr. Burgess: It is the same thing as pear blight, and the only remedy is to cut out the twigs as far as you can.

Mr. Peters, Franklin county: I would like to ask as to what kind of soil is the best for pear trees?

Mr. Burgess: Well, I don't know as I could give you a definite answer to that. In the northern part of the state where nursery stock is grown, I know they raise most excellent pear stock on heavy clay soil.

Mr. McDaniels, Franklin county: Speaking of the blight, I think it is not altogether fatal. Last summer, in my neighborhood, I noticed a great many of the thistles and a great many of the weeds blighted. Something I never noticed before.

Mr. A. H. Judy, Darke county: I would just say that the United States Experiment Station has given tests along that line of the quality of the soil, and the accompanying effects of it upon the blight, and they find that the poor soil is less inductive to blight than the rich soil. That shows that sometimes when we try to make our trees grow, we are harming them more than we are helping them.

Dr. Chamberlain: I don't like to have this association go on record as favoring spraying during blossoming time. The records and testimony of almost all scientific men show that you had better not do it. It does kill bees, and kill them badly, and I like to have my neighbor's bees help to fertilize my orchard. Another objection is that it does not do the work as good. I want the blossom fallen, and the apple with the calyx up ready to receive the poison, when it will do the most good, attendant with least harm. I don't believe in spraying while the blossoms are still on the tree. I like it better afterwards.

Music by the Cecilian Ladies' Quartette.

The President: The next subject is one which, while of general interest, will be more especially so to those who are interested in horses. The paper will be presented by one of our prosperous young farmers from Pickaway county. The people of that district have been delighted to place him in high honor, and we all know that during last year, as a member of the General Assembly, he did much to help forward that which was of general advantage to the farmers of the state. I take pleasure in introducing to you Senator R. W. Dunlap, who will speak on the subject, "The Modern Draft Horse."

ADDRESS BY R. W. DUNLAP.

Mr. Chairman, Ladies and Gentlemen:

I am not surprised that this subject is on the program for discussion, because the draft horse of today is a profitable animal. A few years ago he was not a profitable animal and we did not care to discuss him; he was not really worth talking about. No other horse was worth talking about. We were about as much disgusted with the horse a few years ago as the little boy was who had a gray mare to take care of. He found that it got rather monotonous to attend to the old mare every night and morning. And one day he heard his father talking to his mother about a cofferdam. Well, he wanted to know of his father whether cofferdam was a swear word. His father said "No," and he went on to explain what it was. Then the boy said, "If cofferdam is not a swear word, I wish the old gray mare would cough her damn head off."

Today, it is different, and we always like to talk about those things in which there is profit, and I believe we can spend a long time this morning in discussing what the draft horse is, and should be, perhaps.

A question would naturally arise in your mind, Is the modern draft horse any different from the ancient draft horse, or the draft horse of a few years ago? To answer this question we have only to inquire what was the draft horse of former years. I am yet young, but old enough to remember the time when the draft horse was not of the same make-up, conformation or type as the draft horse of today. An animal called a draft horse a few years past could not properly be called a draft horse now. A short time ago any horse that would weigh fourteen or fifteen pounds, awkward, big headed, lazy and good for no particular work, was classed as a draft horse by the laymen, and today in many places in Ohio this same notion prevails. Many men say, "I have a good draft horse, but cannot get those good prices I hear of and read about. I do not think raising draft horses pays, hence I will abandon the business and try something else." We have all heard such expressions. If we will become acquainted with the animals such men raise and force upon the market, we will find that they are not draft horses, neither are they road or coach horses, but quite likely a lot of misfits that belong to no particular class, and for which there is no market. Should not the farmer learn to produce that which the people want, what the market demands? What would you think of a merchant stocking up with a lot of inferior low-grade articles for which there was no market? I think you would consider him unwise and would say that he would certainly fail if he continued that practice. It is not difficult for us to recognize the folly of the merchant keeping articles for which there is no demand, but it is almost impossible to get some farmers to admit that it is just as unwise and unprofitable to keep unmarketable horses. There may be some excuse for certain farmers raising what is known as the "general purpose horse," or the horse weighing 1,200 to 1,400 pounds, with no particular characteristics about him, and for which there is no popular demand.

I say there may be need for such a horse on some farms where the owner has the heart to use the same animal to draw the breaking plow, the harrow, the corn planter and the binder and mower six days in the week, and the buggy and carriage at night and on the seventh, where he does not object to working an animal all day at heavy work at which every minute of the time the animal must exert its full strength to accomplish its master's desire, or in case he enjoys taking the dust of every other driver on the road and likes to ride early Sunday morning in order to have plenty of time to get to church, and if he is willing to take a low price for the animal when he places it upon the market. I say under these circumstances, where we breed and raise horses to wear out on the farm, and don't mind wearing ourselves out at the same time, this horse may have a place. If, on the other hand, the owner prefers a horse that can draw the plow ten or twelve hours each day without exerting his full strength each moment of that time, and a kind that takes only four to do the same amount of work that five or six smaller ones would do, and do it easier to the animals and owner as well, the kind that the other fellow always wants and for which he is always willing to pay a very liberal price, the kind that does not take much, if any, more food to produce, he must in this case abandon the misfit and seek to produce the draft horse of as near the modern type as is possible.

It might be well to describe at this time what should be the conformation of the modern draft horse. I suppose all of you have attended our State Fair and seen these modern draft horses on exhibition. If you have spent some time in the horse ring, you have observed that the up-to-date draft horse is one that stands close to the ground with short legs and broad base. The feet are well apart, with space enough for another foot of the same size to be placed between them. The back of this animal will be somewhat shorter than that of the speed horse. It is with the hind legs that he propels himself, and thus it can be easily seen that since the collar is on the shoulder the whole weight of the load is drawn by the back. Therefore, it must be short, broad and well muscled. The shoulder of this horse is long, well-shaped, so as to give a good base to the collar. It should be more nearly perpendicular than that of the speed horse. However, sloping shoulders are often found in our best draft horses. The hocks of this horse will show rather a narrow angle because it is by this that a greater leverage is given and he is able to move heavy loads.

The body is massive, low set, ample, very muscular and cylindrical. He will have solid, large and broad bones and limbs, and the limbs well-formed and properly placed under his body. He will have large, healthy, well-formed hoofs, heels well separated, frog strong, healthy and quite hard, good physiognomy, plenty of style and action, ardor and endurance. He must have a short, rather straight pastern in order to do the heavy work required of him. His weight should be in the neighborhood of a ton. If he weighs a little more or a little less, but is good otherwise, he will not be long without an owner.

You ask what breed this animal should be. I say that he can be of any draft breed. Each has special characteristics which commend it to the admirers of different breeds. It is not necessary at this time to favor one and condemn the others, for all breeds sell alike when the animals are of the right kind.

It is quite easy to describe the animal we would like to produce, but to produce him is another thing. The question is, Why are there not more good horses on the market today? Is it because the service fees of good stallions are too high? This may be the reason, and I believe it is in many instances. I think many times the stallion owners are responsible for so many inferior horses. Often the fee asked is more than the average farmer with the average mare feels he can afford to pay. What should the fee be? This I cannot answer. In one locality where good draft mares are found a fee of $20 for the service of a good registered draft stallion to insure a living colt would be considered right and proper, while in another locality, where inferior mares are kept and farming is not so profitable, it would be considered too high. Quite often the service fee is more than $20 and a good colt is not insured. This price very often is the cause of owners of good mares breeding to inferior animals and getting poor colts. I think many times stallion owners are in too big a hurry to get back the high purchase price which they are compelled to pay for the stallion, and they take what is considered a short cut and charge quite a high fee.

Would it not be more profitable to the owner of the stallion (no doubt it would be to the owner of the mare and better for the community) if a smaller fee were asked? I am inclined to think the increased patronage would in very many communities pay for the horse sooner. A word more for the stallion. I find that most of our better stallions throughout the state are sold by the importer or breeder to companies organized by an agent of the importer or breeder. This very often is unsatisfactory to all concerned. Each member of that com pany too often thinks just how the horse should be managed and if it is not handled his way he thinks it wrong, and if the horse does not pay a big dividend the first year, trouble arises that never grows less. Most stallions sold by importers carry a large amount of fat. They are in the very best condition possible to get them to show well. If they have any defects in the conformation of the body, it is usually covered by fat. Fat will cover defects in horses about as well as in cattle. These stallions very often fall into hands that do not understand changing the stallion from a show animal to a breeding animal, and the consequence is he is often worthless the first year and sometimes the second, and occasionally is never of any value. In choosing a sire to produce a modern draft horse, I would much prefer the one that has been in service a few years to the one fresh from the importer. I would prefer the stallion which has had moderate work throughout the year when not on the stand, and is in moderate flesh, to the one that has been housed the whole year and is covered with fat. The colt is larger and stronger from the former than from the latter, and is almost sure to make a better horse. The exact conformation of the stallion I would use to produce the modern draft horse would depend somewhat upon the mare I had to breed. If I had a rather long-limbed, long-coupled dam, I would choose a sire the reverse; that is, one short-limbed and well coupled. We must not forget, as so many are prone to do, that the dam is just as important, if not more important, a factor in producing a good horse as the sire. We can not, as many hope to do, breed any kind of a broken down, crippled and diseased mare of any or no breed to even a grand champion draft stallion and get a horse that will top the market. We must remember that like produces like, and a defect is almost sure to be transmitted to the young. If not noticed in the first cross, it may crop out in some future one.

To get the best, let us select the mare that has size, quality and is sound in every respect.

The high service fee and inferior stallions may be the cause of many worthless horses, but the mares of Ohio are certainly responsible for many, many more. It is a lamentable fact that Ohio has comparatively few good draft mares, mares suitable to produce the modern draft gelding, such as our big packers, brewers, merchants and others are more than willing to buy at long prices. If we can only devise some means to rapidly improve our mares, we would soon have good horses in Ohio, as we have good cattle, sheep and hogs. To be sure, it costs more to produce good horses than it does to produce good cattle, sheep and hogs, but I am sure the profit is greater and we are well repaid for the extra expense and effort.

Before bringing this paper to a close, and perhaps it might be of interest and benefit as well, I will call your attention in as short a time as possible, to a few measurements that are usually uniform in most all the well-conformed draft horses. I am well aware that a person can not become an expert judge by the facts I am going to present, or by any amount of study or book knowledge he may acquire; nothing will take the place of artistic instinct and actual practice in judging animal conformation. However, I do believe that there are some elementary principles which can be readily learned that will greatly aid the artistic instinct, and greatly help in obtaining practical experience in judging. To show the possibilities of good results in this study, I wish to call your attention to some measurements made by Mr. J. B. Crabb, of our Ohio State University, in the measurements of forty-six horses, mostly three-year-old stallions. He compared the head to other parts of the body, and found results as follows:

Number of horses measured		46
Age		3
Weight		1,803
Length as compared with length of head:		
Height at withers	66.04	2.47
Height at croup	66.62	2.48
From point of shoulder to quarter	69.75	2.61
From lowest point of chest to ground	34.08	1.32
Circumference of arm	22.7	.83
Circumference of cannon at center	10.16	.38
Circumference of foot at coronet	18.83	.70
Length of head	26.71	1.00
Width of forehead	8.17	.30
Width of chest	20.93	.78
Width across hips	25.48	.95
From point of hock to ground	24.53	.92
Circumference of thigh	21.5	.80
Circumference of shank	11.74	.44
Circumference of body	86.24	3.23
Length of croup	24.5	.91
Dorsal angle of scapula to hip	30.9	1.15
Length of shoulder	27.3	1.02

We must remember that like produces like, and any defect is almost sure to be transmitted, and if not noticed in the first generation it will crop out in some future generation, and it is no uncommon thing for certain characteristics to be carried along in the blood for ten generations or more and finally develop.

We should not follow fads too far. In other words, we should not sacrifice quality for something of much less importance in order to produce an animal that might, in a few cases, command a higher price. I believe sometimes we sacrifice quality for quantity; that is, we will do everything to get size and neglect other things of greater importance. It is also a fact that some breeders have preferred to breed to a horse of a certain color, of less quality, than to a horse of another color of the same breed. To be sure, I always like a horse of a good solid color, but I do not think it proper to sacrifice quality to produce an animal of no better color, but perhaps for the time being, a little more stylish. We should in the draft horse business profit from the breeder of the road or race horse and the cattle breeder, for we can always see the other fellow's faults sooner than our own.

To succeed in the draft horse business, as in any other, it is necessary to devote some time and study to it. Think how many farmers of today are raising horses that, if sold, would hardly pay for a year's keep. Those farmers, I venture to say, do not lose much sleep in studying the market, do not spend much time in attending farmers' institutes, and pay no attention whatever to the conformation of horses for different purposes.

The man in the draft horse business who studies the market as well as the horse and seeks to produce that which the market demands, has succeeded in the past, is succeeding at present and I believe will succeed in the future.

Mr. Frank Blackford, of Preble county: It is very much like a bachelor discussing children for me to discuss this question this morning, and yet it comes to me: Is the two thousand-pound horse the horse we want on our farms? Now, I question that. I question whether the proposition, as given by the Senator, is the one which will meet the approbation, and meet the needs of the requirements of the ordinary farmer. I know we have horses in our territory that are just horses, and yet they accomplish more work, they stand up to the work better, and they are easier kept to do the work. In other words, they move easily, and don't consume a great deal of the energy in moving themselves as the two thousand-pound horse does. I question whether the two thousand-pound horse is the horse for the country. I question whether he is the horse for the farm, and the one that would be of the most use to us.

Senator Dunlap: Now, we always expect such talk. And we like to be prepared for it. I have been thinking about this for a whole week—how to answer that question. I think I said in my paper that we should not sacrifice quality for quantity, but if a man gets just as good quality in a two thousand-pound horse as he gets in a fourteen-hundred pound horse, we are way ahead, because if we put the horse on the market we can get twice as much for it. There is a great difference in horses, in all animals, not excepting man. And one horse of a certain weight may do a great deal of work, or a certain amount of work, while another horse of a certain weight may do a great deal more work. I remember having on my farm a draft horse that weighed something like seventeen hundred pounds. I know that mare could do more work than any of the others on my farm. She had the vim and vigor. She was the kind that when she would move away from you, you could see the frogs of her four feet. Of course, if we have the big ones that drag around, they will break down more corn than they are worth. We want the kind that have the vim and vigor to them.

A member: I am no horse breeder, and do not know anything about it in a systematic way, but since the question has been spoken of by the member, I wish to say that on my farm I have one team of large mares. In ordinary work flesh they will weigh seventeen hundred pounds. Then I have another team that in ordinary work flesh will weigh about thirteen hundred pounds. They all have a bit of draft blood in them, especially the large mares. And we found this, that while we think the large animals are well built for strength and, in following the description of the gentleman, they fit pretty well the description that he makes. In a general way, we find this in the use of those two teams on the farm: In extremely warm weather the lighter horses are much more able to stand the heat, and when we put those teams on the plowed ground it seems as though the heavy horses wear so much more than the lighter horses. Of course, we believe when we have anything heavy to pull on solid ground, we find the heavy team is better than the lighter team for that work.

Mr. Worthy, of Licking county: I happento have a team something similar to the team this gentleman describes. I want to say that there is one thing about a draft horse, many are spoiled in the breaking. You take a big, heavy colt, and start him by the slowest horse you have, and when you have him broken you have a slow horse. Put him beside a fast walker, and gradually harden him up, and you will find that you do not have one of those sluggish horses. We have a team that weighs sixteen hundred pounds. I don't think there is a team in that section of the country where I live that will go the rounds they do with the plow. They don't rip around, but they go right around. Two years ago my son was hauling wheat. A gentleman from town was hauling wheat over the same route. Some of it was hard, and some was rough road. I asked this gentleman how much he was hauling. He said he had fifty-five bushels, and he would not haul that much again, and my son never hauled less than eighty or one hundred bushels at a time. We feed them just the same as we feed our other horses. As to breaking down corn, we did not have any trouble. I used to have this idea that a horse should be this way, so he could get up and go. I was in the cavalry three years, and I find the colts of that kind are always in demand. And I believe if we follow the gentleman's advice, and not be too particular about the feeding, and get something good, there is something in it for us.

Mr. P. Z. Blue, of Henry county: I would just say that I am a great lover of horses, and of heavy draft horses, and I agree with Brother Dunlap. I have horses that run all the way from fifteen hundred to seventeen hundred apiece, and my boys this summer would go into a corn field seventy rods long, and they would plow through an eighteen acre field every day; get on their plows, and when supper time came they had those eighteen acres through nicely, and when we go to counting up we find that we have all the corn on that gound we wanted. We take lighter teams, and I can't see any difference, so far as putting them on the plowed ground. And my Brother Dunlap, if they are built right, and are the right kind of horses, I don't care how big they are. When you go to sell them, they are the horses to bring the money; you can't get them too big.

Mr. A. H. Judy, of Darke county: If I get the drift of this, we are not discussing the foreign horse, we are discussing the draft horse for market. And the fact that all have agreed that big horses leave the farm and go into the markets and into the cities condenms them for farm use. If they are better for farm use than for city use, they would be kept on the farm; but that does not discount their worth as a source of profit at all. The draft horse in discussion, to my idea, is the horse for those to raise that want to raise horses on a farm to make money out of by selling. Now, my experience is this, that if we want to run a pump possibly a one and one-half or two-horse power engine is sufficient, but if we want to run a modern separator we want a twenty-horse power engine. Now, it is the business that you want to apply your power to that will determine what kind of power you want. I don't see any need of the four thousand-pound team on the farm.

Mr. Callum, of Warren county: I would like to ask the Senator two questions: How many misfits are there usually in breeding the draft horse? Second, does the draft horse have heart room compared to the ordinary horse of today?

Senator Dunlap: To the first question I would say, of course, there are as many misfits on the draft horse business as any other business.

Mr. Callum: What is the per cent.?

Senator Dunlap: I could not tell exactly the per cent. It would depend on the breeder. I think the modern draft horse has as much heart room as the scrub, and a good deal more, as the measurements that we have here, and other measurements I have looked up, would indicate.

Mr. Reuben Rankin, of Fayette: That brings to my mind a question that I thought of asking Mr. Dunlap. In the measurements that he speaks of there, the experiments, what was the observation with reference to the excessively large head, or the smaller measurements in proportion to the great; what was the observation?

Senator Dunlap: Well, I have the figures in another place, and I don't happen to have them in my paper here. If you care to look at it closely you can see the measurement of each and every horse of those forty-three that were measured. I don't remember what those different measurements were, but in a general way, the big headed horse might be well proportioned otherwise, but the small headed horse might be proportioned otherwise.

Dr. W. I. Chamberlain: There is lots of difference in men. We have all noticed that a man with a big head is very well proportioned otherwise.

The President: The noon hour is here. Now, we have an announcement or two to make. By the direction of your worthy secretary, W. W. Miller, I make the announcement: Professor C. G. Hopkins, of the University of Illinois, has the second address on our program this afternoon. The secretary informs me that, on account of his failure to make his train in Cincinnati, Professor Hopkins cannot reach here until 4:05 this afternoon. He also tells me that this is the only hour that he can give us, so that all of the exercises of the afternoon will be expected to come before that hour. Although it will be quite late, if we wish to take advantage of the professor's address, we will have to remain until after 4:05. We will now recess.

AFTERNOON SESSION, January 10, 1904.

The Institute was called to order by the President at 1:30 p. m.

Music by the Cecilian Ladies' Quartette.

The President: It is in order now to appoint two committees to report the first thing tomorrow afternoon at 2 o'clock. The Committee on Resolutions will be: Dr. W. I. Chamberlain, George E. Scott and Lowell Roudebush.

The Committee on Nominations: Senator R. W. Dunlap, J. E. Strope.

Please to allow me to announce once more that Professor Hopkins, of the University of Illinois, who was to speak the second place on the program this afternoon, cannot be here until 4:05 this evening. We are confident that he will be here at that time. Secretary Miller so informs me. We will be well repaid when we hear the professor. One hour is the only time he can be with us. We will expect him a little after 4 o'clock. We should all remain to hear his discussion. The other persons on the program will come before that hour with their parts.

We have with us this afternoon a man who in his experience has been accounted among the best authorities of any who have practiced stock raising in Ohio. I have been at his home, and it is a place where I delight to go. His name is John M. Jamison, of Roxabell, who will speak to us on the subject of lamb feeding. I would ask that, as Mr. Jamison proceeds with the paper, if you have any questions to please write them plainly, hand them in to me, and he will answer them at the close of his address. Most of you understand why I make the request—his hearing is defective.

I now have the pleasure of introducing to you Mr. John M. Jamison, of Roxabell, Ohio, who will speak to us on the subject of "Lamb Feeding." (Applause.)

ADDRESS BY JOHN M. JAMISON.

Before the farmer or speculating feeder stocks up with lambs, the supply of feed should be in hand, or at least a sufficient quantity to make the undertaking a safe one.

In this paper I shall speak of the kinds of feed I am familiar with in southern central Ohio. To meet with the best success it is only necessary to have what can be grown on the farm—clover and alfalfa hay—one or both, although the latter is preferable—corn, and the weighage it gives as fodder, or stover, or silage. Good bright clover chaff threshed without rain, comes in excellent play as part feed, stored in racks in the lots and covered to keep dry. With silage I have had no experience, but I have no doubt but that it is an excellent feed when fed in connection with clover or alfalfa hay. Roots, mangels and turnips I found excellent feed, but abandoned their use on account of the labor required to produce, care for and feed them.

However, roots fed in large quantities have an objectionable feature in that they sometimes cause trouble with the urinary organs. It is safe to start in a little short of the feed required if the feeder is in a section where the shortage can always be made up by purchase. Last year I bought most of the corn fed and some hay; this year may need a little hay to finish out with unless rye pasture comes on to help out. What is needed in this line I have always been able to purchase at about market price, a little below, or at a slight advance.

SHELTER.

Next after the supply of feed for consideration comes the question of shelter. This year lambs for Christmas fed in southern Ohio could have been finished with but little loss, without shelter, but it won't do to count on dry weather all winter. Consequently, next to feed shelter is a most important feature. The shelter must protect from wind as well as snow and rain. Wind-breaks on the windward sides of the feed lots may well be classed as part of the shelter.

The amount of shelter should be sufficient for each lamb to have room to lie down comfortably. At the beginning the amount of space should be one-half to twice as much more than is needed, for by the time they are finished for market they will have increased in size sufficient to use the extra space. It does not require expensive shelter, but it must be rain and snow proof.

In connection with barn and shed roof shelter, I have had in use a cheap frame made of posts and rails that is covered with bundled fodder each fall. This shed covers sixteen hundred feet of floor space and answers the purpose better than one I use that is covered with steel.

WATER.

In equal importance with feed and shelter is water. It is useless for a feeder to expect success without an abundant supply of it where it can be had, without going out in the weather and where it will always be clean. Hand pumping I found unsatisfactory, because never too much was pumped, but rather too little. The well supplying the water should be a safe one, that will not fail when the water is most needed.

It is more satisfactory if pumped by wind or other power, into a storage tank and carried to the troughs or tubs with pipes and hydrants. I believe hydrants preferable to use to float valves, and tubs preferable to troughs, because they can be easily cleaned. If the water can be kept constantly flowing into and through the drinking places I am sure it will be relished more by the lambs.

THE LAMB SUPPLY.

With many the supply must be had by purchase, and then the question comes up where to get them. The natives grown in southern Ohio are not in sufficient numbers to meet the demands for feeders. Many do not try to get natives, but buy westerners when they can get them. I believe natives would be well liked if they could be had even in quality and size—that is, a sufficient number of one kind or breed to fill a feeder's lots. But this can not be done. As a sample of what is gathered in when filling a yard, will say that I have in a lot of about two hundred and fifty high grade Delaine Merinos, pure bred Rambouillets, pure bred Dorsets and grades of the Downs, besides others that are so far back that it is hard to place them. Then the difference in quality as regards flesh is as wide and variable as that of their breeding. Some were purchased out of a corn field, and others had been fed corn for some weeks before they were purchased, while others were about as low in flesh as they could be when bought of the farmers that raised them. But few men will want a sufficient number of this kind to make it possible to sort them into lots of desirable size, as regards number and quality, to have them even in size and flesh, hence they have to be put into the feeding yards as purchased, which makes it simply impossible to finish them up even in quality. Another objection to natives, they are not always healthy. The westerners are liked and desirable because none of these objections that stand against the natives can be laid against them. Up to this year lambs could be bought in Chicago to suit the feeder's fancy, as regarded size, quality and condition of flesh, and were universally liked because they are so hardy and healthy.

With these necessary preliminaries we come to the point that tries every man, that of starting on feed and properly finishing.

HOW AND WHEN TO START.

If the feeder has fall pasture in abundance he will want to commence feeding sooner than the feeder that expects to use only dry feed. Pasture can well be utilized and to an excellent advantage while starting the grain feed and getting them accustomed to hay. This is certainly the better way to start natives. If the pasture is in sufficient quantity continue its use till they are on full grain feed, which should require thirty days. While doing this it has been my custom to bring them to the lots and sheds in the evening and keep them there over night. The lots should be of sufficient size to make them convenient to work in. If shock fodder is fed room should be had for the racks and sufficiently large besides, so the accumulation of stalks will not have to be moved before the lambs are sold. When the lambs are first brought to the lots and buildings they will prefer to lie out of doors.

To start them on feed, put a small quantity of hay in the racks, or, if the racks are also used for corn feeding, put in a little ear corn cut in small lengths, so they can shell it easily. If the corn is new it will be necessary at first to chop it into small lengths until they learn to eat it. As the corn gets dryer, breaking the ears in half will answer, and further along the ears can be thrown in the racks whole. The quantity fed at first must be small, for it will take several days to get all to eating. The first to start will be apt to eat too much if they can get it. As the number eating grain increases the amount fed can be increased.

The final enclosing in the lots should not be done till the lambs learn to fill up on the dry feed so well that they will not shrink when shut off the fields.

SALT.

Salt should always be before them and kept in a dry place. If they always have access to it they will drink more freely. By the amount of water consumed I have been able to tell whether or not there is salt in the box.

DIPPING.

As soon as the supply of lambs is in the lots, and they are improving, a warm, sunshiny day should be selected and all of them carefully dipped. Every feeder should have an outfit for doing this work. An outfit for a farmer feeding in a small way can be put in place for twenty-five dollars or less if the lay of the land will allow the use of cement concrete to build the tank and drainage floor. No man can expect success if the lambs are infested with ticks or other vermin. Westerners, even if they have a clean bill of health at Chicago, should be dipped at the farm as soon as rested and improving. Feeders have neglected this to their sorrow and serious loss.

RACKS.

Racks can easily be built that answer every purpose for hay, fodder and corn feeding, and of any desired length up to twelve feet. The floor to a rack should be eighteen to twenty inches wide with side boards to the floor four to six inches high. The bottom of the rack should be about eight inches from the ground. Three feet is about the right height for a rack—the slats on the sides seven inches apart, slats one-half inch by three inches and necessary length. Old barrel staves make excellent slats. The sides of the rack should be perpendicular so the lambs can feed with their heads inside the rack between the slats. If the racks are loosely filled with hay they will soon have it all under their noses. If too much hay is fed they will eat off the top and fail to reach the finer part underneath. Cattle and horses will nose down for these finer parts, but lambs will not unless fed only what they will eat clean. The rack should be made of as light material as possible; to get the required strength inch plank for the box part and good shingle lathe for posts, and nails around the top.

It is my custom to clean the racks once a day. If not enough coarse straw to require it, the cobs at any rate are thrown out. Ear corn is fed in small quantities at the start once a day. When this once a day ration reaches near full half feed, it is divided and feed twice a day, increasing gradually till full ration is reached, always feeding a little short of the limit so that each lamb will come to the rack for his share.

It is the aim always to keep the racks clean. If corn is refused in any part of the rack the reason is found out and the rack scrubbed if necessary.

MANNER OF FEEDING.

Now, the lambs that have corn twice a day get good fodder from morning till after they have had their evening feed of corn, when they are fed what alfalfa they will clean up by morning. Those that have not yet reached full corn ration have their corn at noon, and fodder and hay as the others.

The lots must be kept clean by throwing in straw when necessary. The same is true of the shed floors. There is nothing they enjoy more than clean straw to play over and lie down on. They will not lie down or play when it is filthy under foot.

QUIETNESS.

It should be the aim of the feeder to be as quiet as possible about the lots when feeding or giving necessary attention. If he must whistle or sing while feeding the tunes should be the same. Neither should the feeder make noticeable changes in his clothes or it will cause restlessness among the lambs. As nearly as possible the same person should do all the feeding, and strangers passing through the barns or sheds should be under the escort of the feeder. A shepherd's crook should be found in a given place and a good pair of shears with it. When a lamb needs togging it should be attended to quietly so that the others will not be scared.

The period of feeding is governed very much by the condition of the lambs when they go on feed, although the period can be lengthened when it is desired to use up a large quantity of hay or fodder or both, feeding lightly of grain in the meantime. But after they reach a full grain ration one hundred days' feeding will bring them to the danger point, whether they are thin or in good flesh when they are started, and it will be wisdom on the part of the owner to find a market for them as soon as possible. But it should be an axiom not to be departed from, not to sell till well finished.

The President: Now, members of the Institute, we all agree that we have listened to a most excellent address, giving evidence not only of a cultured gentleman, but of one who understands fully his subject. I am sure that there is not one person here this afternoon but who is interested in this subject. You don't all feed lambs, but I am sure you all delight to feed upon the lamb, and if you would have him well fed and have good lamb chops, let us discuss this question. If you have any questions, kindly give them to Mr. Jamison or present them to the Institute. We would be glad to have an earnest and live discussion of this most important subject.

Dr. Chamberlain: On account of the difficulty of sending in written questions, I would suggest that they be fired into the chairman, and that the chairman repeat them to Mr. Jamison, so that he may answer them.

Mr. Roudebush: I would like to ask Mr. Jamison what relative value he places on alfalfa hay in feeding lambs.

Mr. Jamison: I believe chemical analysis used in comparing alfalfa with other feed rates it almost as high as bran in value. I tried it this year. I felt that I would about as lief have it as to have bran, because lambs eat it as readily, or more so, as they do bran, and if you know anything of the value of bran for that purpose, to keep up the bone and muscle of animals, then you will know something of the value of alfalfa as feed. I may not have enough alfalfa to finish my lambs, but if I don't I hope I may have enough rye to finish them. Two years ago I hoped to have fattened my lambs on rye. Most of the feeders would say: "When you get them to the lot keep them there; never let them out." I don't believe any such a thing, if you have anything good for them to eat when they get out. They go out with a rush the first day, take a big run, but each single day after that they will go out orderly, eat what rye they want; if it is pleasant, lie down in the field and rest, and if it is unpleasant, come back to the barn quietly and orderly. I don't know of any better way, when lambs are shorn in the spring, than to give them their regular feed and allow them to run on the rye field through the day.

Professor Wm. R. Lazenby: There is one point that is suggested by Mr. Jamison that raises a question in my mind. He spoke about feeding the roots, and claimed, as many do—they measure by the dry matter in the roots, beets, as I suppose they were—that he did not think it was profitable. Now, is it not likely we make a mistake in measuring, say certain root products by the weight of dry matter, percentage of dry matter? I suppose I look at this matter from the standpoint of the horticulturalist rather than a stockman, but I know that stock foods are measured by our chemists in proportion to the dry matter they contain. But now, how is that with fruit? Our best fruit, fruit that we enjoy, and I suppose the fruit that does us the most good, has a very high percentage of water. Good milk, I suppose, good milk is 87 per cent. water, and yet I apprehend that for young animals, at least the ones that cannot find any food, however much higher percentage it might have of dry matter, that would be as good as this milk that has so much water in it. I am not here to say that everybody could raise roots, of course, for stock, but I do think that if I had to choose between a good slice of bread, and could have a generous slice, and one apple, or have two slices of bread and nothing else, I would take the one slice and the apple, because I think it would do me more good, and I think the equivalent to the apple is a pretty good thing for all classes of stock. We have raised this year between fifty and sixty tons of carrots upon the university gardens. Now, we do not use these ourselves, but we sell them to the horse breeders, a firm of horse breeders. They pay us fourteen dollars a ton for carrots. While they are paying for quite a percentage of water, that is true, compared with other food for these horses, for I suppose the percentage of water is very high and the percentage of dry matter correspondingly low, yet I believe that succulent food is of greater value to those horses than anything else that is given.

Mr. Markel, of Pickaway county: I would just like to say this to Mr. Jamison's remark—that the float valve would freeze up. If it will be of any benefit to farmers, I will say I have my float valve so it never freezes up. I have the pipes laid three feet under ground, so they never freeze up, and when I haul it out to my gardens I simply make a very small tank, just large enough to work in. Now that float valve never freezes up, and from that float valve I feed all those animals which are on a level with the float valve. As fast as they drink it it always keeps floating out of the top. At other places where I feed my fat cattle, the float valve is in those places and it never freezes up. We cover the troughs at night. I think it would do for sheep.

Mr. Keller, of Madison county: I have handled sheep the greater part of my life. I am a "hillican," and it is true that "hillicans," as a rule, like to handle sheep, and for that reason I proceeded in it. I do not feed precisely as Mr. Jamison does. I usually begin to feed my lambs in the fall, just merely early enough to have no shrinkage. Then I feed for the April market. I simply feed them, as I say, scantily, but sufficiently, corn and fodder and clover hay, until about the first of February, when I increase the feed and continue on full feed until possibly the middle of April. I find that I then have them upon full feed about sixty or seventy days. By that I mean that in feeding them I give them all they will eat without sustaining any loss. It is a very careful matter in feeding lambs and getting them on full feed without any deaths recorded or without any serious results from overfeed. It is a very ticklish matter, as we sometimes express it, in beginning to feed them corn so that they will have no deaths by that means. I usually crop my lambs about the first of February. I might say too that we dip them early in the summer, in order to get rid of the ticks, and that in February, about the first of February, we take off their fleeces. I find that they do so very much better, in fact, I think the corn goes one hundred per cent. further when the fleeces are off. We house our lambs in a basement barn and find that they get along very well. We allow them to run out every day, even sometimes when it is snowing. They go out and prance around and leap and bound and enjoy even the cold atmosphere, only sometimes a few days after they have been clipped. We shell our corn for the lambs. Mr. Jamison don't like that. I have fed my lambs on ear corn, but I find that they do much better by shelling the corn, which costs about three cents a bushel. Now, I might say further we use the self-feed, and we shell enough corn for a week or ten days' feeding. That facilitates labor. By feeding ear corn cobs accumulate in the troughs, some of them seem to get sore mouths, and I find it is not so successful as the shelled corn, and have it as a self-feed. They eat that all day long, and sometimes at night we find them eating, and they drink at all hours. We have water in the basement barn. I do not regulate it with a float valve, but a spout or something further, and we can always have sufficient water, and it scarcely ever runs over. On our tanks, where we feed cattle, we use the float valve and that is all.

Mr. George E. Scott: I don't know as I can get the information from Brother Jamison, but I would like to know some of the results of corn ensilage.

Mr. Jamison: I have had no experience with it at all. If I was satisfied I could use it in buildings I think I should give it a trial. But I have plenty of alfalfa hay and good corn fodder. Ensilage would go further, but I think I can get along all right until I can experiment with it, but it must be fed with alfalfa and clover hay to help it out. Ensilage should not be fed by itself, but should be fed with alfalfa or clover hay.

A member: Brother Jamison told me he was raising alfalfa and that it averaged from three to five tons per acre every year. Now he tells us that alfalfa is worth as much as bran. Bran is worth twenty dollars a ton with us. Now, four tons to the acre would make eighty dollars. I choose to sell the alfalfa instead of putting it into sheep and then selling them.

A member: I think the gentleman made one mistake. He said that bran was *worth* twenty dollars a ton. If he means that is what it costs he is all right. It is not worth that nine times out of ten. Bran is not worth twenty dollars a ton.

Mr. Rankin: What was the real cause of the death of those lambs suddenly? I would be anxious to know what was the trouble with them.

A member: Heart failure. (Laughter.)

Mr. Rankin: I asked the question in good faith and I must assure you, gentlemen, that answer is not satisfactory.

A member: It is generally caused from fatty degeneration. That is the most common cause of death in lambs. I think Mr. Jamison will tell you that.

Dr. Chamberlain: I was about to say that I thought a more careful answer could be given. In regard to feeding roots, you can't get a Yankee to feed roots. He won't bend his knees enough to cultivate them, to store them and to cut them up, and to feed them, not so long as he can make corn ensilage, which will answer for the same purpose. Prof. Lazenby speaks of a diversity of food. I remember being at an Institute when Prof. Lazenby told how many quarts of strawberries it would take to give a man a full feed of albuminoids, and my memory is it would take three bushels to feed a man the necessary albuminoids and about six bushels to give him the necessary . . . . That is the truth as to animals, it does not seem to agree with our high prices of labor to attempt to raise roots. You can't get a half dozen Yankees in the United States to bother with roots when you can make corn ensilage that will answer the same purpose.

Mr. E. P. Snyder: There seems to be a good deal of trouble about lambs on full feed, that seems to be the cause of their death sometimes. Why ever put them on full feed? Raise good heavy merinos, put them on grass and make them feed on grass, and by that way you will feed them at a good deal less expense and get a good deal more out of them. You can find that a fact, gentlemen; you can get as good a price for them at any time as you can for the other.

Mr. Durbin, of Greene County: I can't help but agree with Prof. Lazenby in what he says about the raising of sheep. Now, I don't believe there is a solid feed in that two hundred bushels. Nature itself sets us one of the best examples we have, and we find that the man who sticks close to nature is the man that is going to succeed.

Mr. Holden, of Meigs: I though maybe I could tell you a little something about alfalfa, as I got into it by mistake. I had three or four acres that I sowed for millet and I got alfalfa. I have had it about three or four years, and it is on the side hill. You have been making it out here that alfalfa is worth about eighty dollars per acre. It may be on the right kind of ground, but not on side hills. There are patches in my field where there is good alfalfa and then there are patches where there is none at all. I got a little discouraged with it and tried to plow it, but I couldn't plow it. It is a terrible thing to try to get rid of. But I say I believe our horses and cattle like it the best of anything they can get. Give them corn and they will take alfalfa hay first. We had a good deal of trouble at first trying to cure it right. Down there nearly every spring it rains so much that we have to cut it in wet weather. This last spring it was very high, very heavy, and we did not let the ground get dry enough, and consequently we had a little mould. It is all right and a splendid feed.

Mr. Jamison: You don't know how glad I would be if I could hear what is said and know whether these men are picking me to pieces or not.

The Chairman: Oh, no; they are not, Mr. Jamison.

Mr. Jamison: And whether I should be glad to answer them back or not. But in making a talk to you in this way some little things escape me. Now one thing in particular that I wanted to call your attention to is this: Above all things try to have everything quiet about your feed lot. Don't have any horses around your sheep. If the horses begin to make a racket and the doors are open every last sheep goes out. Another thing, be quiet yourself when you are among them. If you must sing, sing the same song. If you must whistle, whistle the same tunes. And another thing, don't make any great changes in color in your dress. If you wear a black hat, don't pick up a red one when you go into your lot or you will have trouble. Now, how did I come by this information? I remember one morning very well, I went out to my sheds to feed my lambs and they all started to get out of the way. I could not think what was the matter until quite a little while afterwards, and then I happened to think I picked up an old red hat that lay around the house and wore that to the lot, when I had been accustomed to wearing a black hat.

Another thing, don't try to feed old sheep with the lambs. As soon as the ewe comes into the lot she will make trouble for you, for the older she gets the greater fool she is. I had about a dozen old ewes in with a hundred lambs. There were three or four ways I could go into that feed lot. I could not get in in any way without starting an old ewe, and from the time she first saw me she started every lamb out of the lot. That is one of the things a man must run up against, and one he has got to watch against or else he will be overcome in his efforts.

In reference to that bunch of ewes, I sold them to a man one day and I got them and put them in a pen at the side of the feed lot. In two hours I could see a difference in those lambs. They began to quiet down. Why was it? Because the old ewes were not there, the first time any one came around they would jump up and run.

A member: I would like to say in reply to Mr. Jamison, he says while he does not understand everybody very well, he always understands me. Now, the only thing that I heard said about him here that might be discouraging was Brother Chamberlain's remarks, which seemed to indicate that he might be a Yankee. (Laughter.)

Music by Cecilian Ladies' Quartette.

The President: We are glad to have listened to such an excellent paper as that presented by Mr. Jamison. We have another excellent address for this afternoon by Mr. W. G. Farnsworth, of Waterville. Mr. Farnsworth has made a success of the work he is going to talk about. His subject is "The Culture of Fruit by the Farmer."

ADDRESS BY W. G. FARNSWORTH.

Mr. President, Ladies and Gentlemen of the Institute:

It is unnecessary for me to say this afternoon that I am pleased to be with you, although I would much prefer filling a position in the audience. We always enjoy meeting with men of our own kind and occupation to discuss the matters that are of interest to each and all of us. In my fruit talk this afternoon I will endeavor to make my remarks as brief and to the point as possible so as not to weary you. And for a few moments let us observe the subject. You will notice it is culture of fruits *by* the farmer and not the culture of fruits *for* the farmer. Now, while we ourselves are commercial fruit growers and following this line of work as a business, we do not feel, as possibly a few of the commercial growers do, that we should discourage the growing of fruits by the farmers for their own use. I have heard some make the remark "that we will injure our markets." Now we believe that our markets largely are not with the farmers, as but very little of the fruit or a very small proportion of it is consumed by the farmers. Further than this, if the professional fruit grower who makes a profession of this and studies it from every standpoint cannot enter the market and compete with the farmer he had better seek some other branch of business for which he is better adapted. On the contrary, we do earnestly urge every farmer and every person who has a tract of land and can do so, to grow his own fruit in abundance for his own use, supplying it in abundance for his family. There are several reasons for this. One is for the pleasure it is in the home and in the family, to have it in abundance that we may go to the orchard and gather it fresh from the place where God has so abundantly provided it. We may have it nearly every day in the year. If not from the trees we have it in the cellar or cold storage, in one form or another. Another advantage is the health it affords having it regularly three times a day. Now I do not advocate using it as a food exclusively as Prof. Lazenby has already stated, as it would require rather more than we are capable of consuming. I am satisfied that another point that we may consider along this line is that of making the farm pleasant for the young people, the boys and girls upon the farm. There are many present here today, or at least a few of us, to whom the mention of the old harvest apple tree in the corner of the orchard or the small patch of wild strawberries in the corner of the meadow will bring back some pleasant memories. But I believe if we can furnish these to the boys and girls upon the farm, many of them will possibly choose it for a profession where otherwise they might not and we can get them to stay on the farm and engage in farming. I have heard some farmers say "We buy what we want" as an excuse for not growing. Do they mean this or do they mean to say they buy what they must have? Many times it is the latter—buy what we must have. There is a great difference between these two assertions. What we want, judging by myself, would be all that we could consume upon the table three times a day for three hundred and sixty-five days in a year and many lunches between meals. What we must have often is simply a few bushels at the height of the season for canning purposes, from which we would secure two or three meals fresh on the table of the different kinds of fruit, with a few barrels or bushels to store in our cellars for winter's use. Hence there is a good deal of difference in these two expressions, what we must have or what we want. Others will say, "We cannot spare the time or the labor required to grow the fruit upon the farm." Well, now, I have just been listening this afternoon to Brother Jamison and the discussion. Why, they are growing carrots or green feeds of different kinds and forage plants for the sheep and lambs. We will go to a considerable amount of labor in growing green products for farm animals. Why not spend a little time and labor in growing fruit that our children and family will relish? I think we should do for them fully as much as we do for our cattle and sheep. There are others who think there is some mystery connected with it that they cannot grow it successfully for their own use. True, we must admit, that at the present age the number of insects and different diseases which destroy our orchards are seemingly on the increase, and we must fight harder and harder each year and study these diseases and insects more closely to grow it successfully. Yet I believe we can grow fruit regardless of all these, and if we ourselves as farmers cannot and do not like taking up the study of these diseases and insects, possibly the young boys or boy upon the farm will be glad to do this and make it his future vocation. While I do not wish to advocate the growing of fruit largely by the farmers in connection with the other work upon the farm, unless they are fitted to give it the care or attention that they should, and care for it by spraying, pruning and thinning of the fruit to make a success of it, I do believe that it is a duty involved upon all of us to furnish it in abundance for our families and our homes.

Now, in considering this question, after we have decided to grow our fruit, probably the first question is the location of the plantation. Now, while there is a difference of opinion as to the different locations for growing fruits, some locations doing better than others, I suppose as a rule we should choose a point or a plot of land near the house so that the wife and children of the home can gather the fruit for the table, not obliging them to go thirty or forty yards, simply because there is some suitable place for fruit at that distance. By employing the tools and a little labor, fitting the ground and thoroughly draining it, nearer the house, we as a rule can have success. The form of this plot, as has often been stated, should be in the form of a long strip so that the work can be done with a horse and cultivator and dispense as much as possible with the use of the hoe upon this fruit plot. If it is taken good care of at the right time it requires but little labor with the hoe to keep it in good condition.

The first fruit that I will mention is that of the strawberry. I mention this for the reason that it is the first fruit of the season to ripen, generally coming along in June, and you have already heard it said many times probably about the strawberry, that the Lord might have made a better berry, but he never did.

In the culture and care of the strawberry the first point to be considered is that of the plant and selection of the variety. Now, when we come to speaking of the different varieties of the fruit, I will not attempt to give you a list here that will succeed throughout the State, for it is my opinion and belief that you can get far better information by going to your nearest fruit grower or neighbor who is growing for his use, asking for the varieties that have succeeded in your vicinity. What is successful in my locality may be an utter failure in some other point in the State. Hence I will not speak of the variety, simply that in selecting strawberries we should be careful and set some plants of a perfect blooming variety, if we are going to use an imperfect blooming variety, so that they will fertilize the other and produce fruit. This is all I will say as to the selection of the varieties.

As to the plants. We would not wish to use plants from old beds, never setting plants that have been taken from beds of more than one season's growth, always use new plants. On receiving them and after our ground is ready to plant, we should prune the top and the roots of even the strawberry plant, cutting them off to about four inches in length and removing the old dead leaves or runners that may still cling to the plant. In the setting of the strawberry for the home use we would suggest the spade and line method, using the line to get our row straight and plant with the spade. Carry the plants in a pail in which there is a couple of inches of water and in which the roots are placed. If there is a boy about the place have him carry the pail and hand you the plants. Place the spade in the ground at an angle of about forty-five degrees, straightening it up, leaving about four or five inch open space behind the spade. The plant is given a little jerk to straighten the roots which are put into this space. Now, that is a very rapid way of planting and we find it very satisfactory. We must be very careful in placing in the ground and getting it at the proper depth. If the plant is too deep every rain will wash the earth in and form a crust there and destroy the plant by smothering. While if it is not deep enough the roots will be exposed. As soon as the plants are set we start the cultivator at once. Our ground has been rolled firm and it is left smooth for planting. Then by tramping we have packed it solid and we wish to loosen up the surface and have a fine earth mulch there to hold the moisture that the plant requires for its growth. We aim to keep the runners cut off from some of the varieties, and where we are growing varieties like the Crescent or Warfield we aim to keep off the runners until the latter part of June. We also remove all the blossoms, cutting off the blossom stems the first year, as what little fruit is borne will be spoiled by the rain beating it into the ground, and we want the strength that goes to this fruit for the growth of the plant. The culture and care consists simply in keeping a fine loose earth mulch there all the time, conserving the moisture for the plants and gradually narrowing up the cultivator as the season advances and allowing the runners to spread. In September we aim to go over the bed and thin out. If some of the varieties, such as the Warfield, set their plants too thickly, we can take a small hoe and thin them out again to about six or eight inches apart and placing in the best possible condition to produce a full growth the coming season. The winter protection consists in mulching as early in the season as possible. In field culture of course we have to wait until the ground freezes, and I believe it is advisable to do so in home culture.

For the mulch, if we have marsh grass that we can use we would prefer this, if not we can use leaves or straw. Leaves are very apt to blow away unless we weight them down with evergreens or branches of trees, but straw from our fields will do just as well if it is free from weed seed and reasonably well threshed. In spring we aim to remove this mulch before the green leaves start or about the time it is ready to start. After this growth is started we are liable to injure the plant by removing and exposing it to the heat. If we aim to keep the beds over until the second year, immediately after harvesting we would go upon it with a cultivator and cultivate in between the rows again, thinning out and hoeing, putting it into nearly the same condition it was the preceding year, though our practice has been for field culture and I believe it will be for house culture, to set out a new bed each year as we can do this nearly as easily as we can clean up an old bed, and we get better fruit and more of it.

A few words as to the raspberry. There are so many of them. The black raspberry we plant in a different way. We set the plants about six to eight feet apart, depending somewhat upon the variety as to its rank and thrifty growth, marking out the furrow as deep as has been plowed. There is some of the loose earth that will roll back in and upon this earth we set the raspberry plant. Now we aim to use a thrifty plant. We would much prefer throwing away the small feeble plants, using only good plants; taking hold of the stem with the left hand, covering the roots about an inch in depth. Then as it grows we gradually fill the furrow up as we cultivate.

The pruning the first year of the raspberry consists in pinching out the terminal bud after it has attained a growth of eighteen inches (the red raspberry we do not prune until the coming year); by pinching out its bud it is self-supporting and it does not fall over. The following spring we cut back the side branches to about six inches in length the first year; after this about ten inches in length the side branches, and allow the main branch to grow about two feet before pinching back. We aim to remove all of the old wood the second year, as soon after harvest as possible, thus removing lodging places for disease and insects. I believe we can keep our plantations and garden plots freer by this means. If we are crowded with work upon the farm and cannot give our small fruit the attention we should, I believe we can mulch our raspberries and blackberries heavier with straw. If we mulch them so as to keep down the weeds and keep the moisture there we can do this and save work, but we would prefer cultivation where practicable.

Now as to the blackberry. We will give it a little more space, the rows a little farther apart; then they are sometimes a little too close as they are very friendly.

The currant and gooseberry we plant in similar manner to that of the raspberry and blackberry, and care for them in much the same manner. The growth of the currant is different from that of the raspberry and blackberry. For this reason the currant bears its fruit on wood two or more years old, while the raspberry and blackberry bear their fruit on wood of the present season. Thus we aim to cut out each year two or more of the older plants and allow some of the newer ones to take their places.

I will say nothing as to the grape, although I believe it is one of the choicest fruits that we have upon the farm and is easily grown in sections where the grape rot is not injurious to any extent.

I wish to say a few words as to some of the tree fruits. In going over the State I have noticed many of the old apple orchards. As a rule I believe we can say that four-fifths of them are neglected; they require pruning, spraying and cultivation. On the contrary there are very few thrifty young apple orchards in the State, to my observation at least, and I have been in many portions of this State, in the southeastern portions especially, I am satisfied from what little knowledge I have of that portion of the State that the apple orchards can be grown with profit. Much of it is adapted to the growing of the apple successfully if they will give it the proper care.

As to the varieties of the apple for home use, this is a local question and must be decided for ourselves. I am satisfied that one mistake is made in my own section, at least we all grow too many varieties in our home orchards. We find possibly twenty different varieties in some orchards and only twenty-five or thirty barrels of fruit in the same orchard. This is not a profitable orchard if we have an abundant crop and have some to sell. True, if we are growing simply for home use we should have a variety covering the season from early spring until late in the summer; but aside from this for simply home use I believe we make a mistake setting out and trying too many new varieties, not confining ourselves as closely as we should to some of the more tried varieties on the market. In the selection of our trees and the planting of the apple we should use judgment. Now we prefer a good, strong, thrifty two-year-old tree to one older in years. We want it headed low down for our purposes. If you are going to cultivate your orchard, working about it with teams, possibly heading it higher would suit you better.

The question comes, Where are we going to get it? From our nearest nurseryman whom we consider responsible. I believe we should go to the nursery if there is one within reasonable distance and select the trees ourselves and care for them after we get them home, seeing to it that the roots are protected and that they have some roots to start with. Then we should prune the tops. I know when they purchase trees and take them home many give them no root or top pruning; in the nursery it is what is called balanced. In digging them from the nursery they must remove a large portion of the roots and if we do not prune the top then we are starting our tree in an unbalanced condition and in a short time the trees are dead and dried out, and especially is this the case if the spring is dry, windy and warm. Cut off the roots to where they are smooth, and clean and fresh, and the top accordingly; then aim to plant our trees to lean towards the direction of the prevailing wind so that each prevailing wind will gradually straighten it up. While if we start it straight originally it will allow the wind to strike more directly on the bark of the tree and we are liable to have sun scald of the bark. On hillsides we can set closer together than on the level. We must be guided by the varieties in deciding the distance apart to plant.

As to the after culture of the apple, it is hardly necessary for me to go over it. We have heard it so ably discussed in years previous by Dr. Chamberlain, Brother Cox and others. In the pruning of the apple and in the starting of the head we have made an error ourselves in allowing too many main branches to start, finding in after years that they were crowded. The main branches must start out some distance from each other to avoid crowding.

Just a word or so as to the cherry, pear, plum and peach. I believe we should grow all of these for our home supply. Some of them, the peaches, will not succeed in every locality; but the trees will not cost a large amount and if we secure a good crop or two they have amply repaid all the trouble and expense they have cost us. I believe we should plant a few trees each year.

In conclusion, let me urge upon every farmer in the State to grow a sufficient supply of fruit that he may have it upon his table and in abundance from the time the first strawberry ripens in May until the following May, and that he may have apples, that he may have them to keep in his cellar or in cold storage. I believe many times, as I have said, we can make home brighter and encourage our boys and girls to stay at home, although they do not like the trade their fathers have led as stock raisers, they may like horticulture and look back to their home in after years and think of the old apple tree or peach tree at the back of the house or the pear tree back of the barn and recall pleasant memories of home and feel that life was worth the living after all.

The President: Brother and Sister Farmers: May I say at this moment it is our wish, and the State Board wishes, that as many of you as can will remain until the close of this session. It will be kind and cordial indeed if a goodly number remain to welcome Dr. Hopkins on his arrival. A man of good attainments should have a welcome in no other way.

Now we will take fifteen minutes for the discussion of this subject, and I trust there will be some live and brief evidences of interest in this very important subject. There are a number of questions I would like to ask the speaker. I understand, Mr. Farnsworth, that you take the straw from the strawberry in the spring.

Mr. Farnsworth: I remove a large portion of the straw. We cover them quite heavily early in the season, but we always allow some of it to remain there to keep the berries from becoming sandy, and the rest is drawn in between the rows to hold the moisture.

A member: One question. How far apart do you have the rows and how far apart were the plants in the rows? Do you have the water very cold or warm, and when do you plant the strawberries?

Mr. Farnsworth: For house use we should plant rows about three feet, eight inches or three feet, six inches apart, and the plants about eighteen inches in the row. Some varieties you can set much farther apart, those that make plenty of runners and plants. As to the water, we take it right from the well in the spring of the year. It is not very cold.

Mr. E. P. Snyder, of Huron county: The little boy was writhing in pain under a green apple tree one day, and the Christian Scientist came along and he said: "Boy, what is the matter?" and he said: "I have been eating some of these green apples and I have such an awful pain." The Christian Scientist said: "Boy, what is the matter with you? You aren't in pain; you only think you are." The little boy replied: "Well, maybe that is all right for you, but I have inside information." Now, I believe that if every farmer would grow an abundance of fruit, and especially the small fruits, he would give his whole family inside information about the advantages of small fruits. Now, there comes a time every year when the women complain about having nothing to eat. Well, this problem is all very easily solved if we grow plenty of small fruits, and especially the strawberries. I never knew but one man who said he didn't like strawberries, and he was the most outlandish liar about everything else, and I think he lied about that. Some of my neighbors, who had more strawberries than they could use, the woman said: "I never knew before the advantage of growing strawberries." She said: "I have had strawberries every day for four weeks, all that we want. During that time I have baked just once. During that time just two pies were eaten by the hired man." When we have plenty of good bread and butter and strawberries and cream that is all anyone wants.

Now, by growing all these small fruits it makes a succession of small fruits that last nearly the whole season. We have strawberries nearly four or five weeks every summer, with the blackberries up until September. I wish that every farmer would supply his family with this small fruit.

I want to commend the very practical talk we have had from Brother Farnsworth. I was in Brother Farnsworth's district not long ago. I was boarding at one of those hotels where you pay for what you want, and I thought I would have all the strawberries I wanted. And the girl brought me a dish with about ten strawberries in it. I said: "I guess I will have to have another dish of those strawberries." And when they brought me the bill it cost me so much I decided I would never go to that district to eat strawberries. Now, all this time at my old home the neighbors were picking all the strawberries they wanted at two cents a quart.

Mrs. McNeal: I would like to supplement what Mr. Snyder says in regard to the small fruit. I remember when I first went into the community where I live that there was a scarcity of small fruit there. It was impossible for us to find strawberries for our use at any time, and I sent down in Meigs county and had several crates shipped up, and I feel that is the condition that exists in a great many country communities, that there is not a sufficiency of fruit. In a great many communities we cannot get the fruit unless we can buy it, and I believe there is an opening for a boy or girl to build up a trade for small fruits in certain communities. I would like to see more of the small fruits raised on our farms, for it is one of the best things that is connected with farm life.

Mr. Holt, of Meigs: I thank the lady for the compliment for Meigs, saying she had to send to Meigs county for the fruit. That is where I am from.

Mr. Markel: Now, this question is fruit for the farm. I believe that I know in strawberry growing where the farmers mostly make the mistake. I used to pick as high as thirty or forty bushels of strawberries a day. The professional grower knows this, but the farmer, as a general rule, makes the mistake in mulching strawberries, in mulching them too heavily. In order to tell you just how heavily to mulch them, just mulch them with straw and be careful to take off the chaff, and mulch them just enough so that you can see down through and see the plants. That is one of the most difficult matters—to mulch them just right; that is the only precaution I can give you. So you can see the plants all over, down through the straw.

Then the next mistake that the farmer makes, he will go to his neighbor and get plants somewhere where he can get them for nothing, and he makes the mistake of getting a plant that is not of a fertile bloom, and he gets another plant that has a fertile blossom, but it does not bloom at the same time as the plants he has. I made that mistake. And I tell this for the benefit of all the farmers. If you select plants that do not have a fertile blossom, be sure to select another one that blooms at the same time.

I would like to impress this upon all the young farmers present who want to plant new orchards. The gentleman who read the paper said to raise the top low. That was the difficulty I found. I made mine too low. In picking apples we could hardly get a step-ladder in between the branches and the ground. I would start the branch about four feet from the ground.

And in strawberries he did not give you anything about varieties. Just before we close I would say that I have heard that Senator Dunlap was a good runner about election time, and so I sent and asked the Senator for a good runner, but I don't know how we are going to turn out.

A member from Preble county: There has not been very much said in regard to assembling these trees and these plants. I realize that on a great number of farms the matter of assembling plants is not very much of an item, and yet I believe Mr. Farnsworth could well state how he utilizes his ground to the best advantage in growing the different varieties of fruit which he would care to grow in a farm orchard or in the farm fruit garden. I have made this a practice and study. In planting an orchard which I had a few years ago I did so by placing peach trees and plum trees between the apple trees, and planting the apple trees probably thirty feet apart and dividing that space, because a peach is usually a short lived tree and so is the plum. Is it a good idea to do this, or is it a good idea to assemble your plum trees close together? I have heard they do better in assembling them together. Is it right to utilize the space between the rows in the growing of blackberries and raspberries? My mother has been very successful in that, likewise in regard to the other kinds of berries. Can you utilize that ground, killing two birds with one stone?

Mr. Rankin: I have been in that part of the state where people have been generally pursuing the old treadmill of raising more corn to feed more hogs, and, of course, we have not paid much attention to the fruits, but I believe that nurserymen have been largely to blame for the people not investing more in farm orchards and raising the small fruits. Now, our experience is we have always tried to grow an orchard for family use. However, the orchards we are now using were planted forty years ago, and I have had possession of my orchard for twenty-five years, and there has not been five years in twenty-five that we have not had all of the winter apples that we desire, as well as summer or fall fruit, so that I believe that every farmer ought to have an orchard on the farm, no matter where he has to raise all the apples, at least the summer and fall apples. Perhaps there might be some question about winter apples, but I believe it is worth while to try to raise winter apples.

Now, the strawberries. We have made more failures in trying to raise strawberries for family use than we have made successes, and I believe it is due largely to the varieties. I know I have bought plants from reliable nurserymen to set out. We take a great deal of care of them the first season, and when they would come into bearing there would be an overabundance of blooms and no fruit, and in some an overabundance of runners and no fruit. It was not satisfactory. However, three years ago I went right to the place of a home nursery and I believe I got just two hundred plants I said "I want them for family use. I don't know anything about them. I will set them out according to your directions." I brought those plants home, and I believe now that I did not have ground enough prepared to set out all the plants. The result was I attended these plants with extra care through the first season, kept them clean as a garden, had them growing nicely. Late in the summer there appeared in the patch what we call an annual joint grass, and they just got down into the ground all at once and dry weather came on, and I commenced to rid them out. I thought that I would have my labor for nothing, and I did not go over it all. But that joint grass seemed to be a blessing in disguise. That old grass lay under the plants and the plants came up and seemed to keep all the growth of next year in the way of weeds back, and the result was, I don't know how many quarts, but I heard our folks figure on that little patch, and I heard them figure we got about twelve dollars' worth of strawberries off that patch, and I think we got about twenty-five dollars' worth for the use of them on the table. I want to ask you, Mr. Farnsworth, if it would be safe to take the new sprouts that came up last fall and re-set them for next year, if that would get the same variety?

Mr. Farnsworth: You would get the same variety and you would get the same plants, but the disadvantage is it would not be very well rooted.

In answer to the brother's question on the left, as to the heading of the apple trees, I would say that would depend on how you expect to cultivate them and the objection to getting down on your knees. I admit that some of us do object to that, but it will not hurt us very much.

As to the mulching of the strawberries. Perhaps you had better mulch them a little in the fall and then remove a portion of it in the month of May, when the surface of the ground between the rows is clean.

Mr. Dennis, of Perry county: Has anyone had any trouble with black crickets eating their berries because of the mulch on the ground? I have. I do not know whether it was because the straw was there or not. I would like to know if having the ground mulched with straw will cause the black crickets to come there and destroy the berries.

Mr. Farnsworth: I never had any trouble with them.

A member: I have always mulched my strawberries with straw, and I live in Perry county, and I have never had any trouble with black crickets.

Dr. Chamberlain: I want to speak of two points in relation to the apple; one is in setting the limbs too close together. I remember when I was a young man and set my first orchard. I knew that if a limb started here and another one started there, six inches apart, that the main trunk of the tree would not increase in length one inch, not a single particle. But those little limbs that came out a quarter of an inch in size will grow in fifteen or twenty years to be as big as your arm, and if they are six inches apart when a tree is first planted, when it is young, by the time they are that old the limbs will grow together. As a consequence, I had to cut out a great many of those limbs because they were crowding each other, and my rule was not to leave two limbs, one right above the other, nearer than ten inches.

The other point is in regard to leaning the trees towards the southwest in setting them. We all know that the prevailing winds come from the southwest. I don't believe there is any old orchard in Ohio that does not lean almost forty-five degrees toward the northeast. I notice my orchard and all in the neighborhood. I lean all of my trees in my orchard, when I first plant them, a good deal towards the southwest, leaning thirty degrees. I remember that last year, a year ago last spring, I had set some four hundred new apple trees right on the main road between my house and the town. The town is towards the southwest. It is a diagonal road, southwest and northeast. A few weeks after I got them set the Social Farmers' Club met at my house. They all got around there and, after they had driven by, one of them said to me: "Mr. Chamberlain, your apple trees lean an awful lot towards the southwest," and I said, "That is the intention, for I would rather have the trees lean considerably towards the southwest for the first two years of their life than to have them lean away over like that the next twenty or forty years of their life," and I go over mine and straighten them up, even if I have to set one stake or two stakes under the side, so that when the wind does blow they straighten up, and they will be vertical all the rest of their lives—upward. Another reason is that while they are young and the limbs do not shade the trunk and they lean away over from the trunk, the sun scald is almost perpendicular with the tree, and as soon as the sun scalds you get a flat-headed borer and your tree is finished. We don't want them to lean towards the sun, but we want them to lean towards the southwest.

Mr. Sellers: Some twelve or fifteen years ago I went to a neighbor who was making a success of strawberries for family use and some for market, and he was growing three different varieties and with great success; I secured enough plants to make a good patch and we set them three feet apart and we have continued to grow these same varieties ever since, and they have never made a failure. We continue them on the same ground by changing the row. After two crops we let the leaders run out and make a new row between the two rows and plow out the old plants in the middle. We mulch them heavily like the gentleman said a while ago. We hide them practically with the wet straw, with the chaff well shaken out. We have never had any of the trouble that Mr. Benton spoke about a while ago. The crickets never bothered ours. I think it has done very satisfactorily. I know we grow a good variety and good quantity of berries there every year. They never fail. We don't move any straw in the spring at all. And in fact we have a fine crop of berries, and last season while some of our neighbors who did not mulch but moved the straw failed. We had a late frost and the plants, where the mulch was removed, bloomed out earlier than ours did and the frost killed them. Ours were just coming up and very few were injured by the late frosts. We had a fine crop. We had berries like Brother Snyder; we had them every day. And we picked bushels day after day from the second day of June until the fourth day of July. We had berries every day and all we wanted, and had a good many to give away besides. We don't aim to grow any to sell.

The Chairman: The subject of the next address, "Factors in Crop Production, with Special Reference to Plant Food," is by Professor Cyril G. Hopkins, University of Illinois. Brother and sister farmers, let us give Brother Hopkins a glad welcome. (Great applause.)

Professor Cyril G. Hopkins, of the University of Illinois, then delivered the following address on "Factors in Crop Production with Special Reference to Plant Food:"

ADDRESS BY PROF. CYRIL G. HOPKINS.

Mr. Chairman, Ladies and Gentlemen:

They asked me to stand up high so you could see the charts that I am to use in my address to you.

I want to take just a moment by the way of introduction to call your attention to the figures which I have here on this first chart, illustrating the value of land as measured by crop yields.

TABLE I.

VALUE OF LAND MEASURED BY CROP YIELDS.

Gross value of crop.	Crop yield bushels or tons.	Annual Expense.					Net value of crop.	Net value of land.
		For plant food.	To grow crops.	Harvest and market.	Taxes on land.	Total expense.		
An acre of Corn at 35 cents a Bushel.								
20	$7.00	$.80	$4.00	$1.00	$.11	$5.91	$1.09	$21.81
40	14.00	1.60	4.00	2.00	.58	8.13	5.82	116.36
60	21.00	2.40	4.00	3.00	1.05	10.45	10.45	210.91
80	28.00	3.20	4.00	4.00	1.53	12.73	15.27	305.45
100	35.00	4.00	4.00	5.00	2.00	15.00	20.00	400.00
20	7.00	.80	6.00	1.00	.00	7.80	.80	16.00
40	14.00	1.60	6.00	2.00	.40	10.00	4.00	80.00
60	21.00	2.40	6.00	3.00	.87	12.27	8.73	174.55
80	28.00	3.20	6.00	4.00	1.35	14.55	13.45	269.09
100	35.00	4.00	6.00	5.00	1.82	16.82	18.18	363.64
An Acre of Wheat at 70 cents a Bushel.								
10	7.00	.50	3.00	1.00	.23	4.73	2.27	45.45
20	14.00	1.00	3.00	2.00	.73	6.73	7.27	145.45
30	21.00	1.50	3.00	3.00	1.23	8.73	12.27	245.45
40	28.00	2.00	3.00	4.00	1.73	10.73	17.27	345.45
50	35.00	2.50	3.00	5.00	2.23	12.73	22.27	445.45
An Acre of Oats at 25 cents a Bushel.								
20	5.00	.50	3.00	1.00	.04	4.54	.46	9.09
40	10.00	1.00	3.00	2.00	.36	6.36	3.64	72.73
60	15.00	1.50	3.00	3.00	.68	8.18	6.82	136.36
80	20.00	2.00	3.00	4.00	1.00	10.00	10.00	200.00
100	25.00	2.50	3.00	5.00	1.32	11.82	13.18	263.64
An Acre of Timothy Hay at $8 a Ton.								
½	4.00	1.00	1.00	1.25	.07	3.32	.68	13.64
1	8.00	2.00	1.00	2.50	.23	5.73	2.27	45.45
1½	12.00	3.00	1.00	3.75	.40	8.15	3.85	79.09
2	16.00	4.00	1.00	5.00	.55	10.55	5.45	109.09
2½	20.00	5.00	1.00	6.25	.70	12.95	7.05	140.91
An Acre of Clover at $6 a Ton.								
1½	3.00	1.10	1.00	1.25	.00	3.35	.35	7.00
1	6.00	2.20	1.00	2.50	.03	6.73	.27	5.45
1½	9.00	3.30	1.00	3.75	.09	8.14	.86	17.27
2	12.00	4.40	1.00	5.00	.15	10.55	1.45	29.09
2½	15.00	5.50	1.00	6.25	.20	12.95	2.05	40.91

Land becomes valuable only as it produces crops and you will notice that we have here (indicating chart) some computations based upon the yield of corn. First, figuring twenty bushels of corn to the acre at thirty-five cents a bushel, you see we have a total return of seven dollars for the corn. Now I have allowed for expense of raising the crop and I have included the cost of the plant food at four cents a bushel, counting that we can get nitrogen from the air at one cent a pound and phosphorus and potassium from commercial sources at twelve and six cents respectively. As we count it in Illinois it costs about four dollars an acre to grow corn ready to harvest. That amount will plow the ground, furnish the seed and plant it and cultivate the crop. This, of course, takes into account that the farmer has his own teams and feeds them and hires men by the month to do the work. Then I have allowed five cents a bushel for harvesting and marketing the corn crop or for husking and hauling it to market. I have also allowed for tax on the land at the rate of one-half per cent. on the land value, making a total annual expense for twenty bushels yield of five dollars and ninety-one cents as the cost of growing the crop, and leaving a net value of the crop of one dollar and nine cents. Now, that will pay five per cent. interest on twenty-one dollars and eighty-one cents, so you see if land grows twenty bushels of corn to the acre, then it is worth about twenty-one dollars and eighty-one cents an acre for that purpose.

Now, on the same basis, if the land produces forty bushels of corn to the acre (if you will follow those figures through) we have a net profit of five dollars and some cents. And if it produces sixty bushels of corn to the acre, using exactly the same figures, the land is worth two hundred and ten dollars, or it will pay interest on that much money. If we can get eighty bushels of corn from the land, the land for that year will pay interest on three hundred and five dollars; and with one hundred bushels of corn to the acre, which is not unknown to many of you, we have five per cent. on four hundred dollars for that season. I show you this to demonstrate the fact that the profit in farming comes from large crops.

On land that is worth one hundred and fifty dollars an acre, as I suppose most of your land is in this State, there is no profit in the raising of corn unless you get up above forty bushels to the acre.

We see that land which raises forty bushels to the acre is only valued at one hundred and sixteen dollars, and if the land is valued at one hundred and fifty dollars there is no profit in a forty bushel crop. Now, lest someone might think that four dollars an acre is too small, I have recalculated these data on the basis of six dollars an acre for growing the crop. One might suppose if we use that figure the land values would be changed wonderfully. Please notice the final figures which we get. It is true if we only get twenty bushels to the acre, land is worth sixteen dollars an acre below zero; but if you will increase it forty bushels to the acre and we pay six dollars for raising the crop, we will have eighty dollar land. Now, you see the value of the land increases almost as it did before. With a sixty bushel crop the land is worth one hundred and seventy-four dollars, even paying six dollars an acre for raising the crop. With a one hundred bushel crop land is worth three hundred and sixty-three dollars an acre.

I have also made similar computation for an acre of wheat, figuring the wheat at seventy cents a bushel. You will see that it runs from ten bushels of wheat to fifty bushels, and the land value runs from forty-five dollars to four hundred and forty-five dollars. If we could depend on getting fifty bushels to an acre—but of course we don't expect that—we hardly expect the land to raise forty bushels. As a matter of fact the famous Rothamsteel Experiment Station in England made thirty-seven and one-tenth bushels of wheat to the acre as the average of sixty-two years of continuous wheat on the same land. Sometimes they get fifty, sometimes fifty-five, and then they get sometimes twenty-five and thirty bushels to the acre. But the average is thirty-seven and one-tenth bushels, showing that there is no reason why we should not raise our own average far above twelve to thirteen bushels per acre, which is the average yield of wheat in the United States.

TABLE II.

LATEST CORN YIELDS FROM 28-YEAR.

University Soil Experiment Field—Urbana.

Plot No.	Crop Rotation.	Soil Treatment.	Corn bu.
3 A	Corn—28 years	None	22
4 A	Corn, Oats—28 years	None	40†
5 A	Corn, Oats, Clover—28 years	None	59
302	Pasture—18 years.		
	Corn, Oats, Clover—10 years	None	74
304	Same	Lime	84
306	Same	Lime, Phosphorus	95
308	Same	Lime, Phosphorus, Potassium	95

†1903 crop. All others are 1904 crops.

I present here some results showing the latest corn yields from the University of Illinois, soil experiment field, for twenty-eight years. These are crop yields that were obtained this year with the exception of a single plot where we had oats this year and corn last year. I may say that all of those fields, seven of them, were planted with the same variety of corn, one of the best bred varieties that we have in Illinois, the Leaming, one that we got from Ohio to begin with. Those plots were all planted at about the same time with this same variety, the same number of kernels in the hill, and cultivated the same number of times and in the same way during the season, and on soil that was of the same type. The soil twenty-eight years ago was the same kind of soil. You notice the difference in treatment that the soil has received.

Plot 3A is twenty-eight years continuous corn with no fertilizer, and this year we have twenty-two bushels to the acre. I might say that I have here the average ear which that field produced, but I suppose you would be surprised to figure that with two ears like that in every hill, with hills three feet apart, it would make twenty-two bushels of corn. Just take two three-ounce ears and you can figure seventy-five pounds to the bushel, and then figure two ears to the hill and hills three feet apart each way, and you will find twenty-four bushels to the acre.

And here (indicating) we have forty bushels of corn to the acre. We have this as an average ear (indicating), which weighs about five ounces, and that is a higher yield than we obtain as an average in the state of Illinois. And usually Illinois comes right close to the top in comparison with other leading corn-growing states. This year our yield was thirty-six and one-half bushels according to the latest government report that I have seen.

Here is a rotation of corn, oats and clover for twenty-eight years, and we have fifty-nine bushels to the acre in 1904.

Here is the average ear produced from this plot which weighs about seven and one-half ounces.

Then we have adjoining land that was in pasture for eighteen years. We do not know the previous history beyond twenty-eight years ago, but we know that it was in pasture twenty-eight years ago and for eighteen years since that time, and then it has been in corn, oats and clover for the past ten years, and that plot made seventy-four bushels of corn per acre last year. This next plot had the same rotation, but we put lime on it and it helps the clover to grow somewhat better, and we then have eighty-four bushels of corn to the acre.

And this next plot had the same rotation, but we applied lime and phosphorus and have ninety-five bushels of corn.

Then we applied potassium and we still had only ninety bushels to the acre. When we applied potassium we derived no benefit from it because the soil contains abundance of that element.

A member: I would ask a question, whether your clover crop was all removed?

Professor Hopkins: As a rule we turned under the second crop of clover. That is our rule unless we get a good seed crop. We count that a second crop of clover is quite valuable to turn under. We regularly take off the first crop.

A member: What form of phosphorus do you use?

Professor Hopkins: Steamed bone meal. We use regularly two hundred pounds per acre per annum, or at that rate.

A member: When do you apply that?

Professor Hopkins: We have been making annual applications of phosphorus, but we now apply six hundred pounds of steamed bone meal every three years.

A member: How often do you apply it? Every year?

Professor Hopkins: No, we just put the one application on in three years, applying it to the clover ground to be plowed under for corn.

A member: In what manner do you apply the bone meal?

Professor Hopkins: Well, we put it in with a drill. We do that on these plots in order to get it applied uniformly.

A member: How about field work?

Professor Hopkins: In field work you can use one of the fertilizing drills if you are sowing wheat, or you can use a regular lime sower. For bone meal I would use the regular fertilizing drill.

A member: How do you apply the limestone?

Professor Hopkins: We put that on with a regular lime sower. There are several different makes of lime sowers or machines for sowing this. I have one on my farm that will sow as much as four tons to the acre. I prefer to apply limestone after plowing and then harrow it in.

A member: Would you apply that to a limestone soil, Professor Hopkins?

Professor Hopkins: I would not apply it to any soil that is not acid or sour.

A member: What per cent. of that bone meal is available the first year, please?

Professor Hopkins: There is about twelve and one-half per cent. of the element of phosphorus in good steamed bone meal, and I think about six or eight per cent. of that is citrate soluble.

I give you this as a sort of introduction to my subject this afternoon, and in order that I may use the time that I have at my disposal and to make the points I wish to call to your attention, I have set down on paper what I have to say.

There are six absolute essentials in the growing of crops, namely:

(1) The seed.
(2) The home, or lodging place.
(3) The food.
(4) The drink, or moisture.

(5) The heat.
(6) The light.

Every plant of corn, oats, wheat, etc., requires each of these six essentials; and maximum crop yields are obtained when all of these factors exist in a perfectly balanced relation with respect to the needs of the growing crop, the crop not being subjected to injury by weeds, insects, disease, etc. Any one of these factors may limit the yield of a crop. Consequently, the true art and science of agriculture requires consideration for every essential factor, injury to the plant also being guarded against.

Poor seed will inevitably produce a poor crop. Good seed is exceedingly important, but not more so than a suitable lodging place for the plants; and no matter how good the seed or how perfect the physical condition of the soil, plants cannot grow without food and moisture and heat and light.

Let us determine the limiting factor—the factor which limits the crop yield—and then remove this limitation by providing that essential in greater abundance or perfection.

We may have light sufficient for a two hundred bushel crop of corn, heat sufficient for a two hundred bushel crop, and abundant rainfall for a two hundred bushel crop, and yet the soil, the home of the plant, may be so hard and compact and impervious to plant roots, so non-absorbent and non-retentive of moisture as to limit the yield to twenty bushels an acre, even with good seed and abundance of plant food; or we may plant the best of seed, and the soil may be in perfect physical condition, furnishing the plants an ideal lodging place, with light, heat and moisture provided in abundance for a two hundred bushel crop, and yet the supply of plant food, even of one element of plant food, may be so limited as to hold down the crop yield to twenty bushels an acre. These are extreme statements, but I believe such conditions are possible.

While I shall dwell mainly upon the subject of plant food in this paper, no one should understand therefrom that I do not consider the other five factors of great importance; indeed, they are all of equal importance because they are all essential.

On the other hand some of these factors have commonly been given more attention than others by most people interested in agriculture. As a rule, when crops begin to fail, the first thought which comes is that we must change our seed, we must get a new variety because we think our seed has "run out;" and among the different lines of work carried on by the Experiment Stations, "variety tests" usually lead. It is certainly important that we make variety tests and that we improve our seed as we are doing by the most careful selection and breeding. This is being done, as many of you know. We are breeding corn in the Corn Belt and wheat in the Wheat Belt, and potatoes, sugar beets and other crops in sections well adapted to their cultivation.

It is indeed gratifying to me that the work of the Illinois Experiment Station not only established the fact that corn can be markedly improved by breeding both in its power to yield larger crops and in its increased content of such valuable constituents as protein and oil, but that it also led directly to the formation of the world's first Seed Corn Breeders' Association, which was formed in Illinois only five years ago, and has since been followed by the organization of Seed Corn Breeders' Associations in a dozen states.

You who have followed the work of the Illinois Station in corn breeding during the past ten years, will be glad to know that we now have conclusive proof that we should detassel alternate rows in the breeding plot (each row being planted from a single ear) and then select our seed corn from the best yielding detasseled rows. During the past two years this method has produced an increase of more than ten bushels of corn to the acre.

Let us not do less to improve our seed, but more.

And let us improve the home of the plant by better drainage, by increasing and maintaining the humus in the soil, and by better plowing and more frequent and thorough cultivation. This is an exceedingly important matter in crop production, for by it we may to some extent control both heat and moisture. Drainage not only removes the surplus water from a "water-logged" soil, making plant growth possible, but it decreases the amount of water to be evaporated from the surface and permits the sun's heat which would be required to evaporate that water, to be utilized in warming the soil; it also allows the air to enter the soil, increasing the activity of solid organisms at greater depth, encouraging the plant roots to penetrate the soil more deeply, thus adding to the organic matter of the subsoil and increasing its porosity and giving the soil greater power to absorb and retain moisture and to resist drouth. And let us bear in mind that this applied not only to the flat level lands, but also to the rolling land, and sometimes with even greater force, for thorough tile drainage is one of the best means of reducing the surface washing of rolling lands.

We may also conserve the moisture to a considerable extent by maintaining dust mulches, produced by proper cultivation; and by increasing the organic matter in the soil we are able to increase the temperature of the soil, for the dark color of a soil is largely due to its organic matter content, and dark soils are warmer than light colored ones. Recent investigations by Professor Mosier at the Illinois Station have shown that the temperature of a light colored soil was raised five or six degrees when it was covered with a thin layer of dark soil, and this difference was maintained in bright sunlight from ten or eleven o'clock till nearly sundown.

Of the six essential factors light is the only one over which we have almost no control, but fortunately it is also the factor which rarely, if ever, limits the yield of crops.

But I am to speak with special reference to the subject of plant food, which I believe is truly the least understood and the most neglected of all the factors essential to crop production.

I scarcely need to remind you that there are ten essential elements of plant food. Of these carbon is the only one obtained directly from the air by most agricultural plants. The fixation of carbon occurs in the leaves, the carbon dioxid of the air reacting with the elements hydrogen and oxygen from the water (which is absorbed by the roots and carried to the leaves), forming organic compounds which finally condense to sugar, starch, cellulose or wood fiber and other carbohydrates. Many who are familiar with the fixation of atmospheric nitrogen by means of nitrogen-gathering bacteria living in tubercles on the roots of legume plants, are not aware of the fact that more than ninety per cent. of the total dry weight of most agricultural plants results from the fixation of carbon and the consequent formation of carbohydrates and other organic bodies. While this very large percentage of the plant consists of the three plant food elements, carbon, hydrogen and oxygen, these three elements are no more essential to the life of the plant than the seven other elements of fertility, as calcium, magnesium, iron and sulfur, all of which are present in most soils in quantities far beyond the needs of crops for ages to come; or as nitrogen, phosphorus and potassium, of which one or more may be so deficient in a soil as to limit the yield of the crop.

It is to the consideration of these three well known elements of plant food, nitrogen, phosporus and potassium, which are sometimes called the "golden tripod" of agriculture, that we may well devote more of our time.

In order to emphasize the possible tremendous importance of each of these elements of soil fertility, I beg to ask your attention to Table 3, which gives some of the most striking, yet absolutely truthful, results which we have thus far obtained in our investigation of Illinois soils.

TABLE 3.

PLANT FOOD IN SOME ILLINOIS SURFACE SOILS.

Pounds Per Acre.

Plant Food Elements of Money Value.	Normal Fertile Soil; U. S. and Ger. Ave.	Black Clay Loam; Wis. Gla.	Brown Silt Loam; Wis. Gla.	Red Silt Loam; Unglaciated.	Gray Silt Loam; Lower Ill. Gla.	Peaty Swamp Soil† (drained land.)
Nitrogen	5800	7980	5320	1000	3180	12300
Phosphorus	2000	1920	1020	1000	600	1780
Potassium	5300	9440	10040	5600	5220	1680

CROP YIELDS IN SOIL EXPERIMENTS.

Plant Food Applied.	Corn Bu.	Corn Bu.		Wheat Grams.	Wheat Bu.	Corn Bu.
None	75‡	54	60	3	7	0
Nitrogen	....	54	60	26	11	0
Phosphorus	....	62	73	3	25	0
Potassium	....	50	56	3	16	45
Nitrogen, Phosphorus		69	78	34	33	0
Nitrogen, Potassium		51	59	33	20	59
Phosphorus, Potassium		61	75	2	28	47
Nitrogen, Phosphorus, Potassium		64	81	34	33	59

†Not only low in potassium, but high in magnesium carbonate.
‡A common yield; no experiments on this type.

In the first column we have the average of the United States and German standards, as near as I can obtain them, as to the quantity of the different elements of plant food that the soil ought to have to be a normal producing soil. In the plowed soil we should have five thousand eight hundred pounds of nitrogen to the acre, two thousand pounds of phosphorus to the acre, and five thousand three hundred pounds of potassium. Perhaps some soils would have more, but this is taken as an average for ordinary normal fertile soil.

Here is a black clay loam of northeastern Illinois; that is the richest soil which covers any large area of Illinois land. In that soil we have seven thousand nine hundred and eighty pounds of nitrogen, as against five thousand eight hundred pounds in a normal standard soil; we have one thousand nine hundred and twenty pounds of phosphorus as compared to two thousand in the standard soil, and we have nine thousand four hundred and forty pounds of potassium as compared to five thousand three hundred in the standard soil, or an amount almost double the standard.

Here is the brown, silt loam, in the same section, which is representative of the most extensive soil type in the Corn Belt of Illinois. We have five thousand three hundred and twenty pounds of nitrogen, almost equal to the standard; we have one thousand and twenty pounds of phosphorus or one-half of the standard, and we have ten thousand and forty pounds of potassium, or double the standard; and that perhaps explains why we do not get any benefit from the potassium when we add it to that type of soil. You will notice we have a double series of results taken from two different soil experiment fields, one located near Sibley, in Ford county, and the other near Bloomington, in McLean county. Without any treatment of any kind on that kind of soil we have at Sibley fifty-four bushels of corn. With nitrogen applied we get no increase, although we put on nitrogen enough to make one hundred bushels of corn. Our standard application of any element of plant food is enough to make a maximum crop so as to leave the soil as rich as before the crop was grown. That is why we put on two hundred pounds per annum of steamed bone meal. We added phosphorus and we have an increase of eight bushels, that is, from fifty-four to sixty-two bushels. We added potassium and we have a decrease from fifty-four to fifty, which is a result similar to that which has occurred in many of our experiments, showing that potassium usually produces an injurious effect on this soil type. We have a soil that contains double the standard quantity of potassium, and then we add more. We get an injury, and that is the commonest type of soil in the Corn Belt of Illinois. When we add nitrogen and potassium, we have fifty-one bushels, less than with nothing again. Adding phosphorus and potassium we have sixty-one, almost the same as we get from phosphorus alone, and then adding all three of the elements we have sixty-four bushels. Even in those cases potassium added to phosphorus decreases the yield. Of course we must not draw too definite conclusions from this, but it is plain to see that phosphorus is the element that increases the yield of corn on this soil.

But I want to call your attention more particularly to the other three soil types here. You will notice that this red silt loam is a type of soil that contains about one-sixth as much nitrogen as the standard. It contains half as much phosphorus as the standard and a good supply of potassium, three hundred pounds over the standard.

The gray silt loam is one that contains less than one-third as much phosphorus as the standard, half as much nitrogen, and just about the standard amount of potassium.

The peaty swamp land is one which contains double the amount of nitrogen that the standard does; it contains almost the full amount of phosphorus and about one-third as much potassium as is needed.

Now, if you will notice the chart, you will see the yields of these different kinds of soils. This soil (referring to column four) produces almost nothing. We not only have a very small amount of nitrogen, but it is in a form which is almost unavailable. From three to five bushels of wheat is all you can expect from it in a season. Without any treatment we have three grams in pot cultures; with nitrogen added we have twenty-six grams; with phosphorus added we have three grams, and with potassium added we have three grams. Phosphorus increases the yield after nitrogen has been applied as you would expect it to, or potassium added to nitrogen gives about the same result. Potassium and phosphorus yield two bushels, and nitrogen, phosphorus and potassium give thirty-four bushels. The probable explanation to this is that soluble potassium salts act in some soils as soluble common salt does. You know that on some soils you can increase the yield of wheat by sowing ordinary table salt on it. That has no plant food in it, but it has power to liberate plant food from the soil. Of course, it has only a temporary effect. It is a stimulant, and it is evident that this potassium does something of the same kind, and has something of the same effect in liberating the plant food after we put on nitrogen. That corresponds with the analysis which shows that we do not need potassium unless we use it for a stimulating effect, to liberate plant foods. You see the same thing in this gray silt loam soil.

Now let us take up the next column (referring to column five). Without any treatment we have seven bushels; with nitrogen added we have eleven bushels; with phosphorus added we have twenty-five bushels, and then with potassium we have sixteen bushels; and that we would not expect, except that it has that stimulating effect, because here we have nitrogen and phosphorus added without any potassium, and we have thirty-three bushels. And here again where we have nitrogen and potassium—you see phosphorus is evidently liberated by that stimulating action—it makes twenty. With phosphorus and potassium we have twenty-eight bushels, and with nitrogen, phosphorus and potassium, all three, we have thirty-three bushels.

Now, here is a different type of soil (referring to column six). This soil won't produce any corn, and it is a type of soil covering large areas in Illinois. Without any treatment we get nothing. We put in nitrogen or phosphorus, we get the same thing. We add potassium and we have forty-five bushels of good corn; we have nitrogen and phosphorus added and we don't get an ear of corn; we add nitrogen and potassium and we get fifty-nine bushels; we add phosphorus and potassium and we get forty-seven bushels of corn, and we add all three of the elements and we get fifty-nine bushels of corn. The effect produced by adding nitrogen after potassium was due to the wet season and imperfect drainage, conditions which retarded nitrification of the organic nitrogen in the soil.

From information obtainable from American and European research, it is estimated that a normal fertile soil of ordinary physical composition should contain the amounts of plant food shown in column one as commonly determined, namely: About five thousand eight hundred pounds of nitrogen, two thousand pounds of phosphorus and five thousand three hundred pounds of potassium per acre in the surface soil to a depth of seven inches, which is considered a good depth for plowing. Column two shows the plant food contained in the richest soil of large area in Illinois, commonly called "gumbo," while column three represented the most common soil of the Corn Belt in Illinois, this soil being a brown silt loam. In this column is also given results obtained from two different soil experiment fields located in this type of soil, the first near Sibley, in Ford county, and the second near Bloomington, in McLean county. Nitrogen and potassium applied to this soil either singly or together have produced injury rather than benefit to the corn crop; while phosphorus, applied in steamed bone meal at a cost equal to the present value of six bushels of corn, produced eight bushels gain on the one field and thirteen on the other; after nitrogen had been applied (which can be furnished by clover in rotations) the gains due to phosphorus are fifteen bushels on the Sibley field and eighteen bushels on the Bloomington field. More phosphorus was applied than was removed by the largest crop grown.

To the old worn unglaciated hill soil of southern Illinois (red silt loam, the principal type in seven counties), whose chemical composition shows it to be markedly deficient in nitrogen, we added both phosphorus and potassium and obtained practically the same yield as where no plant food was applied, but when nitrogen was added the yield of wheat in pot cultures was increased from only three grams to from twenty-six to thirty-four grams per pot.

To the principal type of soil in the lower Illinois glaciation (covering more than twenty counties), whose analysis shows that its phosphorus content is less than one-third of a normal fertile soil, phosphorus was added and the yield of wheat was increased from seven to twenty-five bushels per acre.

To the peaty swamp soil, representing some hundred thousand acres in north central Illinois, whose composition shows that it contains less than one-third as much potassium as a normal fertile soil and one and one-sixth as much potassium as the best soils in the Corn Belt, we added both nitrogen and phosphorus and obtained practically the same crop as where no plant food was added, the total yield per acre amounting to less than a ton of corn fodder with practically no ear corn; and yet where we applied potassium to that soil we obtained about two tons of corn stover and forty-five to fifty-nine bushels per acre of good sound corn.

Most of these results were obtained after two or three years' treatment, and in all cases abundance of the deficient element was applied to meet the needs of large crops.

One of the problems which probably is and which surely ought to be uppermost in our minds, is how to restore the fertility of our poorer soils and how to profitably and permanently maintain all our lands in a state of high productive capacity.

You will pardon me if I emphasize the fact that the Illinois standard for the investigation of Illinois soils is set to bring about a system of agriculture in Illinois which shall at least permanently maintain the high crop yields of our best soils and which shall increase the fertility of our poorer soils to their maximum profitable productive capacity.

But to grow large crops requires large quantities of these valuable elements of plant food, and this brings us to the subject of the "Circulation of Plant Food." This, I believe, is the most important process connected with any possible system of permanent agriculture. The farmer of greatest temporary success is the farmer who takes the largest amount of plant food from the soil; but the system of farming of greatest permanent success must be a system which will not only take large amounts of plant food from the soil, but which brings about such a circulation of plant food that so far as necessary equivalent amounts are returned, again to be used by growing crops, and again to be returned.

The most universal practice of the civilized world up to date has been *to ruin lands* and then cry "Westward, Ho!" and he who undertakes to say that the rich soils of the great Central States can never be reduced in fertility knows not whereof he speaks.

What has been the system? And what is the common practice today?

First, beginning with virgin soil, we crop continuously with corn and small grains till the practice becomes improfitable. Second, when these crop yields become much reduced, we introduce clover into the rotation and thus maintain, to some extent at least, the nitrogen. But the fixation of nitrogen is not the only function of clover, nor indeed its most effective function on many soils. Clover is a gross feeder on phosphorus. Considerable quantities of the elements taken from the soil and subsoil by the deep rooting biennial clover plant remain in the roots and stubble and, as these residues decay, the products of fermentation and decay liberate still other quantities of phosphorus from the soil itself, thus furnishing a good supply of available phosphorus to succeeding crops of corn or other grain. (Potassium may be affected in a similar way.) On soils where this is the principal effect of growing clover in rotation, applications of phosphorus produce about the same increase in crop yields as the use of clover; whereas applications of nitrogen itself, even in the best forms, produce little or no increase in the crop. Furthermore, on such soil about the same effects are produced by the use of non-leguminous green manures, such as rye, buckwheat or rape, as are produced by clover or by applications of phosphorus.

Usually this process continues until the clover system fails, until the clover crop is unable to obtain sufficient phosphorus for its own growth. Then comes the common commercial fertilizer system in which we apply to the soil not sufficient plant food to grow good crops and maintain the productive capacity of the soil, but only enough to supplement that which can still be forced from the land. The most common application is two hundred pounds of so-called 2—8—2* goods applied once or twice in a four-year of five-year rotation. A two hundred pound application of such a "complete" commercial fertilizer would supply about three and one-half pounds of actual nitrogen, seven pounds of actual phosphorus and three and one-half pounds of actual potassium, whereas a one hundred bushel crop of corn would remove from the soil in one season about one hundred and forty-eight pounds of nitrogen, twenty-three pounds of phosphorus and seventy-one pounds of potassium; or forty times as much nitrogen, three times as much phosphorus and twenty times as much potassium as is commonly applied for two or three years' crops. Sometimes acid phosphate alone is used and this is certainly less absurd than to continue to buy potassium if it is not needed or to pay fifteen cents a pound for nitrogen when it can be obtained from the air at a cost not to exceed one cent a pound, or at no cost whatever if the legume crops and catch crops are properly fed or pastured.

But even where acid phosphate alone is used the applications are usually too small to supply the needs of maximum crops and maintain the supply of phosphorus in the soil. The common practice is to remove all that can be extracted from the soil even by the aid of the sixty per cent. of manufactured gypsum, or land plaster, contained in the acid phosphate, and then depend upon the added phosphorus to make up the balance required by the crop. Even in the rotation experiments at the Ohio Station where a better system than commonly followed has been practiced, the total phosphorus applied during a five year rotation is less than is contained in a single one hundred bushel crop of corn.

Most farmers use more or less farm manure, and this is well, for it helps to maintain the supply of nitrogen and potassium even though it does not return much phosphorus to the land. It should be remembered that about three-fourths of the potassium in a crop of corn, wheat or oats is contained in the stalks or straw, while one and one-fourth is contained in the grain; also that when the crop is fed to animals practically all of the potassium is returned in the solid and liquid manure; whereas about three-fourths of the phosphorus in the crop is contained in the grain, and even if the grain is all fed a considerable part of the phosphorus remains in the bones of the animal and is thus sold from the farm.

Of course the supply of phosphorus can be maintained by the use of sufficiently large quantities of acid phosphate, and if the continued use of acid phosphate finally produces such acid conditions in the soil as to prevent the growth of clover, as appears to have been a common occurrence where it has long been used, then the acidity can be corrected from time to time by applications of some form of lime.

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* This means two per cent. of ammonia, eight per cent. of so-called phosphoric acid and two per cent. of potash.

At present prices we can profitably substitute for acid phosphate steamed bone meal, which is known to be a very satisfactory form of phosphorus, and thus avoid the possible injurious effect of acid phosphate, but this suggestion could not be adopted by any large proportion of the farmers of this country because of the limited supply of bone meal.

The only very extensive supply of phosphorus is the natural rock phosphate, from which acid phosphate is made by mixing a ton of rock phosphate with about a ton of sulfuric acid (oil of vitriol), the resulting acid phosphates being sold for about fifteen dollars a ton, or thirty dollars for the two tons of material, which contain no more phosphorus than the original one ton of raw rock phosphate which we get for about eight dollars delivered in Illinois.

As to the value of non-acidulated, finely ground natural rock phosphate, I consider this as a material which gives great promise of extensive use in the economic and profitable improvement of poor soils and in the maintenance of large crop yields on good soils, especially in the states throughout the great central West. It should be distinctly understood, however, that repeated experiments have shown that this material gives practically no immediate returns if used in the absence of decaying organic matter. On the other hand when used in intimate connection with liberal amounts of farm manure or green manures or both, we have conclusive evidence that it is one of the most economic and profitable forms of phosphorus, especially where the crop returns for a series of years are to be taken into account.

In exact pot culture experiments carried on under controlled conditions at the University of Illinois, ground rock phosphate used in connection with clover and manure has produced some marked results. Extensive field experiments in operation in our state and in other states also point in the same direction, although the Illinois experiments have not been carried on for a sufficient length of time to justify final conclusions.

Probably the most reliable and valuable experiments ever conducted with raw rock phosphate are those in progress at the Ohio Experiment Station, where careful field experiments with the use of this material in connection with farm manure and clover have been carried on during the past eight years, duplicate experiments having been made each year with each of the different crops included in a three-year rotation of corn, wheat and clover. Based upon the increased crop yields produced where ground rock phosphate was mixed with the manure previous to the application of the manure to the clover sod to be plowed under for corn, as compared with the use of the same manure without rock phosphate, these soil experiments have shown that the addition of the ground rock phosphate increased the value of the manure more than sixty per cent. In other words, as an average of forty-two different tests extending over a period of seven years (I have not yet seen the results for 1904), the average value of farm manure was found to be one dollar and ninety-nine cents per ton, measured in increased crop yields produced; but when forty pounds of finely ground rock phosphate were added to the ton of manure, its average value was found to be three dollars and twenty-three cents per ton, making an increased value due to the addition of the phosphorus of one dollar and twenty-four cents per ton of manure.

At the present price of ground raw rock phosphate delivered in Illinois, namely, eight dollars per ton, the forty pounds of raw phosphate would cost sixteen cents, which would leave an added net profit of one dollar and eight cents for every ton of manure with which the phosphate is mixed. It is worthy of special note that in this same series of Ohio experiments, sixteen cents worth of raw rock phosphate has produced almost as large an increase in the crop yields as thirty cents worth of ordinary acid phosphate, the use of which gave an added net return of one dollar and eighteen cents for each ton of manure with which the acid phosphate was mixed. As an average of forty-two tests with each material, one dollar invested in raw rock phosphate made a net profit of six dollars and seventy-five cents, and one dollar invested in acid phosphate made a net profit of three dollars and ninety-three cents. Furthermore, the forty pounds of untreated rock phosphate enrich the soil in phosphorus twice as much as the forty pounds of acid phosphate; consequently in the long run, the untreated rock phosphate must produce the most lasting results.

In my opinion somewhat larger quantities of the raw rock phosphate should be mixed with the manure to insure maximum profitable crop yields on soils deficient in phosphorus. I am practicing and advising the addition of one hundred pounds of finely ground rock phosphate to be mixed with each ton of manure. The phosphate may be scattered over the manure from day to day as the manure is being made in the stable or in the feed lot; indeed, this appears to be the ideal method of using it, or, when loading the manure on to the manure spreader from the yard or stall, the spreader box may be loaded half full, then one hundred pounds of rock phosphate scattered over the manure as uniformly as possible, and after completing the load of manure it may be hauled to the field and spread.

If farm manure is not available, then I advise applying from one thousand to two thousand pounds of finely ground rock phosphate per acre every three to six years, depending upon the length of the rotation. In this case the phosphate should be applied to clover sod or to a catch crop of cow peas, soy beans, etc., and plowed under with as much organic matter as practicable. With a three-year rotation of corn, wheat and clover, or of corn, oats and clover, one thousand pounds of rock phosphate may be applied to the clover sod and turned under, preferably in connection with the second crop of clover, which often is worth more to turn under than it is to cut for seed. With a six-year rotation of corn, oats, wheat, clover, timothy and pasture, one ton per acre of rock phosphate may be applied to the pasture ground in connection with farm manure and plowed under for corn, preferably with a considerable growth of grass and clover.

In considering the purchase and use of finely ground rock phosphate, attention is called to the fact that this is a form of phosphorus originally provided in the soil by nature. Virgin soils do not contain bone meal or acid phosphate.

It is fast becoming evident that we can profitably use raw rock phosphate in sufficient quantities for more than maximum crop yields and thus gradually actually enrich the soil in that element, but we still have to provide for the permanent maintenance of a sufficient supply of nitrogen and potassium.

It should always be borne in mind that the ordinary soils of the Central States are exceedingly rich in potassium, soluble in strong acid, as determined in the ordinary chemical analysis. Thus, the common prairie soils of the Corn Belt of Illinois contain more than eight thousand pounds of acid-soluble potassium per acre to a depth of seven inches, and even larger amounts in the clayey subsoils. In addition to this it should also be kept in mind that only one-fourth of the total potassium in the soil is soluble in this acid solution, although it is by no means sure that much of this so-called insoluble potassium will not be made available by the same system of farming which seems necessary to make raw rock phosphate available; namely, by a liberal use of decaying organic matter, as farm manure, legume crops and catch crops and other green manures.

It should be understood that if all crops grown on the farm are fed, plenty of bedding being used and all solid and liquid manure returned to the land, the original supply of potassium will be indefinitely maintained; and even if some of the most valuable grains are sold from the farm, the loss of potassium is comparatively slight.

Of course on soils already deficient in potassium, as peaty swamp soils, potassium should be applied in some form, preferably and most cheaply, as potassium chlorid or potassium sulfate, unless one has abundance of farm manure not needed on other land.

Regarding nitrogen it may be said that no agricultural fact is better established than this: That the atmosphere is the only inexhaustible and the most economical source of nitrogen for plant food for all general farming. With good drainage and good physical conditions, and with abundance of phosphorus and potassium provided, about the only possible difficulty in the way of successful crops of clover or other legumes in normal seasons is the present or future acidity of the soil. All soils tend to become acid with long cultivation. Many reactions going on naturally in all good soils tend to destroy the limetsone and other basic or alkaline materials in the soil; thus there is already a need for some form of lime on many Illinois soils of great area, and there will be a continuous need for such material on still larger areas as time goes on. Consequently it seems that some mention of the lime question must be made in connection with nitrogen and legumes, for both the nitrogen-fixing bacteria and the nitrifying bacteria are not active and effective in acid soils.

What is the use of lime on soils and what are the kinds of lime to use?

There are two distinctly different forms of lime. One is known as caustic lime or burned lime, and the other as carbonate of lime of the natural form, such as limestone or marble.

There are two principal effects produced by using lime on soils. One of these is to correct the acidity of the soil, and the other is to decompose the soil itself. To correct the acidity of sour soils is certainly a very desirable and profitable use of lime. Clover, alfalfa, alsike, cowpeas, soy beans and many other legumes will not thrive on soils which are strongly acid. To be sure such crops can be made to grow on acid soils by liberal applications of farm manure or other complete fertilizers, but the nitrogen-gathering bacteria of the legume plants do not properly develop and multiply in acid soil, and consequently the legumes do not have the power which they should have to accumulate large quantities of atmospheric nitrogen by means of the bacteria which inhabit, or should inhabit, their roots. Furthermore, the process which is termed nitrification by which the nitrifying bacteria transform the insoluble organic nitrogen, in farm manure and plant residues, into soluble nitrate nitrogent, the form in which it becomes available as plant food, is greatly promoted by the presence of lime and retarded by acid conditions.

It will thus be seen that the use of some form of lime for correcting the acidity of soils and thus encouraging the growth of clover and other legumes with their wonderful power to enrich the soil, is certainly good farm practice.

Any form of lime which is finely divided and can be thoroughly mixed with the soil, will serve to correct the soil acidity, whether it be ground limetsone, marl, chalk or fresh burned lime, water-slacked lime or air-slacked lime.

The other effect produced by lime, the effect for which it has been most used in past ages, is the decomposition of the soil itself. In this decomposition the organic matter of the soil is destroyed, with the liberation of nitrogen and phosphorus held in organic form and the mineral particles of the soil are disintegrated with the liberation of some plant food elements, as potassium and phosphorus held in inorganic form. This effect is produced only by fresh burned lime or fresh slacked lime. It is not produced by ground limetsone or by old air-slacked lime.

Thus it will be seen that the first effect of lime, the correction of soil acidity, results in a building up process through the increased growth of legumes and the nitrogen-gathering bacteria; while the second effect, the decomposition of the soil, is in all respects a destructive process, serving only to liberate and reduce the stock of plant food stored in the soil. Whether this second effect is desirable will depend upon the nature of the soil itself. On soils which are exceedingly rich in organic matter, such as peaty soils and other swamp soils, it would seem altogether rational to make use of caustic lime to hasten the decomposition of the soil and consequent liberation of nitrogen, if such treatment is necessary.

There may possibly be conditions under which soils contain large amounts of phosphorus and potassium which are too slowly available for profitable crop production, and in such cases it might be good farm practice for a time to make use of caustic lime to hasten the liberation of these mineral elements of plant food. We should bear in mind, however, that this use of lime on a soil which is already deficient in nitrogen, phosphorus or potassium only serves to still further exhaust the soil of its meager supply of these elements. Without doubt this is the most common condition and the most common effect of the use of caustic lime (fresh burned lime or fresh slacked lime). Probably no method of treatment will exhaust such lands more rapidly than heavy or frequent applications of caustic lime. It is true that the immediate effect is usually somewhat increased crops, but it should be borne in mind that when a farmer pays out money for caustic lime to be used for this purpose he is purchasing only a stimulant which will ultimately leave his land in much worse condition than before, especially in the loss of nitrogen and organic matter, and in the exhaustion of phosphorus and potassium from the soil. In other words this use of lime if continued tends rapidly to exhaust the soil and ultimately to leave it practically ruined. In this connection it may be stated that gypsum, or land plaster, produces a similar effect so far as the mineral elements are concerned, although it does not affect the destruction of the organic matter as the caustic lime does.

As a general rule the farmer should use lime only to correct the acidity of the soil, and this is only necessary where there is difficulty in obtaining a good stand and luxuriant growth of a leguminous crop, such as red clover. Probably one ton to the acre will be sufficient on any soil which has in past years grown red clover successfully. Heavier applications may be required on soils where red clover has never been successfully grown. As to the form of lime to use for this purpose, the farmer should be governed somewhat by the cost of the material. Fine ground limetsone will be the most economical form of lime to use whenever it can easily be obtained.

It would be expected that burned lime would produce a greater increase in the crops for the first year or two than would be produced by the ground limestone, more especially where the mineral elements, phosphorus and potassium, are not applied; for the reason that ground limestone produces practically no effect except to correct the acidity of the soil and thus encourage the multiplication and activity of the nitrogen-gathering and nitrifying bacteria, whereas the burned lime not only produces this same effect, but it also acts as a soil stimulant or soil destroyer, attacking and destroying the organic matter and decomposing the mineral constituents and thus liberating plant food from the soil. The use of ground limestone to correct acidity and increase the fixation of atmospheric nitrogen is certainly altogether legitimate and commendable, but to use burned lime to force the soil to give up plant food more rapidly than it would otherwise do, thus producing an increase in the first few crops, but ultimately leaving the soil more impoverished than before the lime was applied, is not thought to be advisable or profitable in the long run, unless the soil contains comparatively large stores of unavailable plant food and abundant organic matter, which is certainly not the case with most soils.

In this connection it seems very appropriate to call attention to a series of experiments which have been carried on by the Pennsylvania Experiment Station, probably the most extended investigation ever conducted relating to the use of burned lime and ground limestone in comparative tests. Four plots were treated with burned lime (slacked before being spread) at the rate of two tons per acre once in four years. Four other plots were treated with ground limestone at the rate of two tons per acre every two years. A four-year rotation was practiced, consisting of corn, oats, wheat and hay, the hay being mixed timothy and clover, seeded on the wheat land in the spring. By having four sets of plots, each crop was grown every year. Seven products were obtained and weighed each year, namely, corn, corn stover, oats, oats straw, wheat, wheat straw and hay. After twenty years' results had been obtained (1882 to 1901), the Pennsylvania Station reports data showing that with every product a greater total yield had been obtained from the plots treated with limestone than from those treated with burned lime. This is certainly significant. Furthermore, with every product whose total yield for the last eight years was greater than the total yield of the first eight years the limestone produced a greater increase than the burned lime, and with every product whose total yield for the last eight years was less than the total yield for the first eight years, the decrease was less where limestone was used than where burned lime was applied (oat straw alone excepted). This is even more significant, in that it demonstrates the tendency of burned lime with continued use to exhaust or destroy the fertility of the soil.

After these experiments had been in progress for sixteen years, the soil of each of the four plots in each test was sampled for analysis. The average nitrogen content of the four plots receiving ground limestone was found to be two thousand nine hundred and seventy-nine pounds per acre to a depth of nine inches, while only two thousand six hundred and four pounds were found in the soil treated with burned lime. This difference of three hundred and seventy-five pounds of nitrogen is equal to the nitrogen contained in thirty-seven and one-half tons of farm manure. In other words the data indicate that the effect of burned lime as compared with limestone was equal to the destruction of thirty-seven and one-half tons of farm manure in sixteen years, or more than two tons a year to the acre.

The estimation of humus in these soils, based upon the determination of organic carbon, showed the soil receiving limestone to contain thirty-eight and nine-tenths tons of humus per acre to a depth of nine inches (counting three hundred thousand pounds of soil to the acre-inch) while only thirty-four and two-tenths tons of humus remained in the soil treated with burned lime. If four tons of farm manure contain only one ton of dry matter (average fresh farm manure contains about seventy-five per cent. of water), and if two tons of dry matter would be required to make one ton of humus (when exposed to the weather manure usually loses half of its dry matter content within one year or less), then this difference of four and seven-tenths tons of humus would be equal to thirty-seven and six-tenths tons of fresh farm manure, which represents the loss from the destructive action of burned lime as compared with ground limestone.

If it is true, as indicated by the Pennsylvania experiments, that eight tons of burned lime, applied during sixteen years, destroyed organic matter equivalent to thirty-seven tons of farm manure or more than four and one-half tons of manure destroyed for each ton of burned lime used, as compared with ground limestone, and, if larger crops were obtained where limestone was used, especially where the practice is extended over several years, and if the ground limestone is sustaining the productive capacity of the soil much better than burned lime, then, as a very general rule, we should avoid applying burned lime to the land, but make liberal use of ground limetsone where needed to correct the acidity of the soil.

And may we not call attention to the fact that limestone is the form of lime originally provided in the soil by nature. Among the most valuable and durable soils in the world are the limestone soils. They do not contain burned lime.

In summarizing, I would say that while we do not have complete, definite and final knowledge regarding all questions involved, we certainly do have sufficient information and data to justify a decision to discard any agricultural system which continually decreases the amount of any element of plant food which is already so deficient in the soil as to limit the yield of crops, to discard any system which ultimately and inevitably must leave an impoverished land and an impoverished people; indeed, to discard any system under which the soil is made to produce smaller crops than when first the virgin sod was broken; to discard the use of gypsum and caustic lime as stimulants or soil destroyers for the sole purpose of forcing the soil to give up even more of some deficient plant food elements than it would otherwise do, and even to discard the use of acid phosphate when applied in such small quantities that a good crop is obtained only by the combined effect of the phosphorus added, together with that naturally liberated from the soil and that forced from the soil by the manufactured gypsum contained in the acid phosphate.

Can we not adopt a system of profitable farming which shall permanently insure a high productive capacity of the soil and which shall be of unlimited practical application? I firmly believe we can. For ordinary soils I believe such a system will include:

First—Thorough underdrainage wherever needed.

Second—Applications of ground natural limestone whenever necessary to correct and prevent soil acidity.

Third—Continued use of large quantities of finely ground natural rock phosphate (or of some other form of phosphorus) in connection with decaying organic matter by which the phosphorus is made available, and by this means gradually increasing the total phosphorus content of the soil, even though maximum crops are removed.

Fourth—Liberal use of clover and other legumes in rotation and as catch crops, by which nitrogen and organic matter will be added to the soil.

Fifth—Feeding of all crops excepting some of the most valuable grains or other high priced products and returning all manure to the land by which means the supply of potassium, the most abundant plant food element in our common soils, will be practically maintained. The manure, together with the legume crop residues, will effect an increase or permanent maintenance of the supply of nitrogen and organic matter in the soil.

With the use of sufficient limestone to keep the soil sweet and an abundant use of leguminous crops and catch crops, and the addition to the soil of a ton of ground rock phosphate, or its equivalent, every six or eight years in connection with all of the farm manure which can be made, the ordinary lands of the central West can be made to grow large crops indefinitely.

This, I believe, will be the Illinois system and the system for general farming on the ordinary soils of all the states here in the great agricultural West, the present, and, we may say, the future granary of the world. Essentially by this system of soil improvement and soil maintenance, I believe the farmers and land owners of the central United States will reject the world's historic verdict, "Westward the course of empire takes its way," and erect a new standard which shall say, "Here a permanent agriculture holds sway." (Great applause.)

Dr. H. M. Brown, of Hillsboro: I would like to ask the professor about four questions that occurred to me during the reading of the paper, and I would like to have them answered briefly. They are these: In limestone soils in hilly countries, like those in Highland county, where the rocks come to the surface, is it likely that the soil will ever become acid? Another is, can the ordinary farmer ascertain whether the soil is acid or not? Another is, will the acid soil tend to go back to alkaline during a series of years of blue grass pasture or other pasture, and what is the effect of acid soils alone without any kind of treatment, and without anything but the natural growth of weeds upon the soil?

Professor Hopkins: Regarding the limestone soils, it seems to me that if lime is in the surface soil, and particularly on hilly land where the soil keeps washing away more or less, those soils are not likely to become acid, and I think I would not advise applying much of anything to hilly soils that are liable to wash. I think one is most liable to lose what he puts on them. Of course, if one puts them into pasture and keeps a continual crop on the pasture, he is all right. I have known where a freshly plowed field has gone down into the river bottom the next morning after it was plowed. The soil just became a cream and washed away with a heavy rain, and I would not advise putting very much expense on hilly land with the expectation of keeping it there.

I want to say another thing, that many of the so-called limestone soils are not limestone soils. We have in Illinois a large area, perhaps three or four counties, where we can find limestone within ten or fifteen feet of the surface, but the top material that we find is glacial drift and loess and not limestone material, and I do not doubt that you have many such conditions in this state, where the top soil is acid and underlaid by limestone, and we should not understand those as limestone soils. Usually true limestone soils have pieces of limestone in them. You can easily tell whether soil is acid by litmus, that is, if the soil is strongly acid, so strongly acid that clover will not grow. The best test that I know of on the soil that a farmer can commonly make is to test with clover, and when he can't get clover to grow on the soil that has plenty of mineral plant food in it, that is pretty good evidence that it is acid.

The question was also asked, whether acid soil, if kept in grass would become alkaline. I don't think it would. The continual decomposition of soil material makes acid products, and not lime or alkaline products.

A member: What is it that improves the soil purely by rest?

Professor Hopkins: That is the other question asked. I think that is almost altogether the accumulation of available plant food. You can get it by fallowing, and they used to practice that a great deal in England, and forty years ago they practiced it in this country, or in Canada, and I suppose they practiced it in Ohio in the early days. But you follow the system and you find it has left off. They are now practicing it in South Dakota. That is my old home. But the soil does not need rest. It needs good, wholesome food as a horse does when he is worn out. If you let it rest, it is true you can get a bigger crop once in two years than you can get every year. You may lose some of it, but you may save some part of the plant food that is made available the first year, and you get it with that of the next year.

A question was asked in regard to the detasseling of corn in the breeding plot. Do not understand that that is to be done in the commercial cornfield, but only in the breeding plot, or on three or four or five acres of your ground, where you plant by the row system, a single ear to the row. We find that there is a tendency to degeneration from inbreeding of corn. It is not true with most plants. The wheat plant is known as an inbred plant, because both female and male parts of the flower are in the same part of the plant, but the corn has the male flower on the tassel and the female flower on the ear. The silks constitute the female flower, while the male flower is the tassel. Usually the wind will carry the pollen away from the stalk, or a good part of it, and the female part receives its pollen from other stalks carried to it by the wind, and in that way corn has been developed, and perhaps it is from that long development in past ages that the corn plant has become to be injuriously affected if the pollen from the same stalk fall upon the silk of that same stalk, or from closely related stalks. So when we plant a row in the breeding plot, and detassel the row, then we have cross-pollenation, and so we detassel every other row, and then we take all of our seed from the detasseled rows. We have been following that for three years, and this year we have an average of two breeding fields with forty-four rows in each field that gives us more than ten bushels increase from the detasseled seed.

A member: That is regardless of the character of the seed?

Professor Hopkins: Yes, sir. We always select the very best seed we can get.

A member: I presume then, from what you say, falling from the male part to the female of the same stalk, will pollenize itself?

Professor Hopkins: Yes, sir.

A member: It will not do it perfectly?

Professor Hopkins: It won't do it on a single stalk out in the field, because the wind will carry it away. But if you will plant it in the corner of an enclosure, or the angle of a building where the wind can't blow it away, then you will have perfect ears of corn. There is no doubt but that it will do that, but where the corn stands alone out in an open field, the wind will usually carry the pollen away and the ears will not form perfectly.

A member: How far will the pollen carry with the drift of the wind?

Professor Hopkins: Well, that is just the same as asking how far a wave will go when you throw a stone into the ocean. I suppose it will carry five miles. We have some extensive corn breeders in Illinois. There is one company in the state that has gone into corn breeding very carefully. They have 27,000 acres of land. They have tried to isolate completely their corn breeding plots, but they can't do it. No matter where they put a plot of yellow corn, they get white grains from pollen grains, which have come from long distances, since there were no fields of white corn any place near them. You can pick those grains out with your knife usually. You may plant your yellow corn far away from other cornfields, but about the time you think you have it well isolated, you will find the white grains there, and you will find that it is absolutely impossible to keep them out. Anyhow I don't think it is very objectionable, because what may blow into your corn and develop there will have very little, or no appreciable, effect.

A member: I would like to ask the professor a question in regard to permanent pasture. I have a great deal of blue grass pasture. Now, if I intend to pasture stock to sell off of my farm, I take fifty to fifty-seven pounds of nitrogen, and forty-four pounds of phosphorus. How can I recuperate, keep up, that soil in a commercial form?

Professor Hopkins: I don't think I am qualified to give any very valuable advice on the subject. I have something of the same kind on my own farm, and I would like to know how to handle it. If the soil is not acid, you could take steamed bone meal and use a disc drill, and put it in with that disc drill, and perhaps, put a little clover in with it—I have seen the clover seeded in with the disc. You might thus be able to recuperate your land. On pasture land that I have seen seeded with red clover, the second year it shows a very good growth of clover.

A member: I would like to ask you if you have had any experience with hardwood ashes, and whether it is of any benefit to the land?

Professor Hopkins: Well, hardwood ashes contain about one thousand pounds of calcium carbonate. And then as a rule they contain about five per cent. of potassium, and perhaps not to exceed one-half per cent. of phosphorous. Now that is all there is in hardwood ashes that I know of; all that has any value. People in the early days who obtained benefit from ashes supposed the soil needed potassium or potash. But we tried potassium on the same soil and it produced no marked effect, and the evidence is now conclusive that the lime did it, and the soil needs potassium least of all. Now, if lime is the thing the soil needs, and if that is the benefit you get out of hardwood ashes, then you can get as much ground limestone—at least I can get it in southern Illinois for $1.10 delivered at the railway station—as I can get in a ton of hardwood ashes, and if you need potassium you can get one hundred pounds of that element in the form of potassium chloride, or potassium sulphate, for about $6.00. You can get ten pounds of phosphorus in steamed bone meal for about $1.00. That would make $8.10. Your hardwood ashes aren't worth more than $8.10 a ton even if you need the potassium. I don't know what you could figure on for ground limestone here. We have several mills over near us that are putting it out, and they put it on the cars for about $1.00 a ton, and we pay the freight.

A member: Why do you advocate the use of steamed bone meal above that of the raw ground bone?

Professor Hopkins: I do it for the reason that raw ground bone has four per cent. of nitrogen in it; that is, eighty pounds to the ton, and the dealers would charge you about fifteen cents a pound for it, and you only get about one hundred and eighty pounds of phosphorus per ton, while in good steamed bone you only get about twenty pounds of nitrogen and about 250 pounds of phosphorus, and you get the steamed bone at a lower price per ton. It is more readily available too. The steamed bone acts a little quicker than the raw bone.

A member: For what reason?

Professor Hopkins: I think because the raw bone has a good deal of fats in it.

A member: The steamed bone is much finer?

Professor Hopkins: Yes, sir.

A member: There seems to be a great deal of lime material.

Professor Hopkins: Well, the lime is in proportion to the phosphorus. There are 250 pounds of phosphorus in a ton of good steamed bone as compared to 180 in the raw bone.

A member: Our steamed bone here runs about five per cent. nitrogen.

Professor Hopkins: That is much higher than we get. We analyze probably four or five samples of steamed bone every year, and I don't think they will average much over one per cent. nitrogen. I know I have gotten down as low as eight-tenths per cent.

A member: How much potash, and in what form, do you put on swampy land?

Professor Hopkins: We always figure on this basis, that we put on enough to make an approximately maximum crop. Thus I figure on enough potassium to make a hundred bushel crop of corn, and that will take about seventy-one pounds. Potassium sulphate or potassium chloride contains about forty to forty-two pounds to the hundred. So that two hundred pounds of potassium sulphate, or potassium chloride, will furnish from eighty to eighty-four pounds of potassium. We put on two hundred pounds to the acre to start with, and then as soon as we get our land up to making good crops, leaving the stalks on the land, we reduce the application. On one of those peaty swamp land fields I think we have raised as high as seventy-three bushels of corn to the acre, and right opposite that on similar ground that has not been treated with potassium we raised four bushels. The first year we will make probably forty bushels on land that won't produce ten bushels without it, and then the second year it ought to go up to about sixty bushels, and we then plan to turn the stalks under, in a commercial way, because they contain most of the potassium. You only take away nineteen pounds in the grain and fifty-two pounds is in the stalks for a hundred bushel crop, so you keep turning the stalks under, and keep turning them under, and after a while you won't have to put on so much potassium, for these stalks furnish and replenish the supply in the soil. Ultimately perhaps twenty-five or thirty pounds of potassium will be sufficient. I think you can't do better than to grow continuous corn on that land unless the corn insect begins to bother you, and then you quit for a while and then come back to corn again.

A member: Can you grow celery without this potash in the soil?

Professor Hopkins: No, sir. Farm manure has ten pounds of potassium to the ton. If you put on eight tons there is eighty pounds. I remember only two months ago reading quite an interesting description of the Kalamazoo celery beds, and the author of the description went on to describe how the soil seemed to be like manure itself, and yet the remarkable thing about it was they could not grow celery without very heavy applications of farmyard manure. In other places they use only potassium salts.

Professor Hopkins: Now as to the question in regard to the ground rock phosphate. The ground rock phosphate, or the natural rock phosphate, is calcium phosphate. It is what is called in the wholesale trade, bone phosphate of lime. Just what that means in science it is pretty hard to tell, but that is what they call it, and they abbreviate it B. P. L., and in the trade they want usually sixty-five or seventy per cent. of B. P. L. That means the compound of calcium phosphate.

A member: Professor, here is a point. The plant takes up very much more phosphorus than sulfur or sulfuric acid. What becomes of the sulfuric acid that is left behind in this dis-association?

Professor Hopkins: The sulfur is not combined with the phosphorus, but with calcium in calcium sulfate or gypsum. I don't think gypsum would have a tendency to make soils acid, but I think it is the acid phosphate which is an acid salt, and that reacting with the soils destroys the lime, takes the lime out of neutral soils, or part of it, to unite with that acid salt, and make again the ordinary neutral salt, and then it will form other acid salts like acid silicates.

A member: Is the ground, untreated rock phosphate available?

Professor Hopkins: There is about one per cent. of available phosphorus in rock phosphate, but we make it available with decaying organic matter. You know the result you get, for example, if you take a pitchfork and stick it in the manure pile and let it stand there for three months—in a pile of manure, while the manure is rotting, you go and pull it out after three months and you can break the tines in two with your fingers. Well, now it has something of the same effect on this rock phosphate. It decomposes and dissolves, and then the plants get it after that.

A member: What is it in the soil or in the humus in the soil that decomposes this rock and makes it available?

Professor Hopkins: The decaying or fermenting organic matter produces organic acids which tend to dissolve the rock.

A member: Would you get as good results in taking this untreated rock phosphate in manure as you can by acid phosphate?

Professor Hopkins: Well, now, that is pretty hard to answer. I believe, of course, that it depends on the amounts that you put in, and on the condition and composition of the soil, and I would also take into consideration the other elements present in the soil. I believe good results are obtained by using the untreated rock with manure, and I also believe it is the most economical way of building up our lands and making money out of them.

A member: Well, now, Professor, is there any need of using the ground limestone when clover catches well?

Professor Hopkins: No, sir. I should say not. I would not pay out any money for any kind of lime where I get a good catch of clover. That would settle that matter for me.

Dr. W. I. Chamberlain: It seems to me that it would be a cruelty to pursue this discussion any longer, for the professor is, no doubt, very weary, and therefore I move we recess.

Motion seconded and carried.

The Institute then recessed to meet at 10 o'clock a. m., January 11, 1905.

Morning Session, January 11, 1905.

The President: We will first listen to our delightful entertainers —the Cecilian Ladies' Quartette.

Music by the Cecilian Ladies' Quartette.

The President: Brother and Sister Farmers: We are thankful indeed for your presence this morning. I have been asked more than once who the ladies of the Cecilian Quartette are and where they come from, and I wish to say that they are from the farms and farmers' girls. They have told me this morning that last night and this morning they milked the cows and took better care of the lambs than they ever did before. I am glad indeed that these ladies are present as well as the others. I trust that another year we will have more ladies than ever before with us. I have been encouraged to say this by a bachelor friend of mine who is present. Now, we realize that, while we as farmers want credit of being abreast of the times, our good women are with us. We find them everywhere playing their part well. It has only been a few months since there was an instance showing that our good, modest country girls can take care of themselves. A young lady, a very young lady in fact, boarded a train on the Lake Shore road recently. She had scarcely taken her seat when a gentleman from behind said: "I am a traveling man from Chicago. My name is Rastus Brown. What is your name, please?" No response. Again the question was repeated with more earnestness: "I am a traveling man from Chicago. What is your name, please?" No response. As the train swept by they passed a farm home and beneath the shade of the tree there in the summer time one of those fellows with a great voice and long ears was enjoying himself. Said the traveling man: "What creature is that, please tell me?" Well, she didn't exactly know, but thought perhaps it was "a traveling man from Chicago."

There is one song in my mind about some folks who lived in the country and their relatives from the city were going to visit them. The city visitors sent them word that they were coming, and this is what the country folks did to get ready for the visitors. They had a good dinner for them; always do have a good dinner.

Song.

The President: I am sure we are very thankful for these songs. It was very good of Mr. Holt to sing them for us. However, we must remember that these feasts of facts and all good things have been prepared with great care by the State Board, and we must not turn aside very much from the plans laid out.

The next subject is "Infectious Diseases of Animals and the Live Stock Industry of the State," by Dr. Paul Fischer, State Veterinarian.

ADDRESS BY DR. PAUL FISCHER, STATE VETERINARIAN.

Ladies and Gentlemen:

I want to apologize for attempting to present a paper this morning. My voice is suffering from the effects of a severe cold that I have had for several days, and I am afraid that most of you will not be able to hear me, but I shall speak as loud as I can under the circumstances.

The purpose of this paper is to discuss, briefly, some of the conditions existing in Ohio relating to infectious diseases of live stock, and to call attention to the means at our command to improve them.

The total value of live stock in the State, according to the last census, is over one hundred and twenty million dollars. According to statistics furnished by the last report of the State Board of Agriculture (1902), the annual losses from animals destroyed by disease amounted to one million, nine hundred and ten thousand dollars. There can be no doubt that the greater part of these losses was due to infectious diseases. With our present knowledge of the cause, and mode of spread, of diseases of this class, it is possible to prevent many of them altogether, while the ravages of others can be greatly reduced. There exists, therefore, no good reason why the question of controlling them should be neglected. In this connection it is not only the losses suffered directly by the owners of diseased animals that must be considered, our home and foreign markets are affected by the health reports of our live stock, and this is a matter of quite general interest.

Further than this, some diseases, such as glanders, tuberculosis, actinomycosis (big jaw), rabies (hydrophobia), trichinosis (trichina), flukes, tape worms, certain forms of itch or mange, etc., affect human beings as well as animals and may be directly transmitted from one to the other, thus furnishing us with additional reasons for giving this subject our attention.

But the dangers that we are exposed to from all these sources, although they are varied and numerous, are not nearly as great as some would have us believe. The exaggerated statements of the press, agricultural and others, that have in recent years been made in regard to the terrible effects of tuberculosis, for example, have done much harm. It was not difficult to see that they were unfounded, and the result was a reaction that has led many to assume the dangerous attitude of indifference. No disease, terrible and devastating as some of them are, has ever succeeded in exterminating the human race, and it is not known that any species of animal, or even plants, have met this fate. Efforts of scientists to discover diseases that would exterminate mice and rats, or prairie dogs, or that would rid the world of the chinch bug, have not been crowned with success.

All infectious diseases are self-limited in the destruction that they can work. Certain facts that are known to science seem to furnish an explanation for this, and they are made use of in artificially checking outbreaks of infectious diseases. Protective inoculation, which has long been successfully practiced against a number of diseases, is based on these principles.

But with all this in our favor, the existence of infectious diseases among domestic animals, even to a limited extent, is undesirable as well as unprofitable. We know that the business of raising live stock would be more profitable if the effects of certain diseases were eliminated; there would result not only an increased production at a reduced first cost, but the demand for the finished product, on account of its better quality, would be increased.

Although the annual losses of live stock from disease, in Ohio, are enormous, judging the situation as a whole and comparing conditions that exist in other states, Ohio seems to be a favored state. Many diseases that are of every day occurrence in some of our states, and that are the cause of the loss of millions every year, either do not occur at all in Ohio or to such a limited extent only that the losses occasioned by them are insignificant. Among this class are anthrax and black leg in cattle, tape worm disease in sheep, and scab or mange and fluke diseases in both of these animals. There are others, but it is unnecessary to mention them. The most serious diseases with which we have to contend are such as occur the world over and from which few countries are entirely free. The more important of these are tuberculosis, glanders, rabies, swine plague and hog cholera.

These diseases are found everywhere and, with the exception of the swine diseases, they occur in practically all species of animals, including man. Nearly everybody is more or less familiar with them. This is perhaps the reason why so few of us appreciate how serious and far reaching are their effects on the economic production of live stock. We have become accustomed to expect certain losses from hog cholera, a disease which all advertised remedies (so-called) have failed to cure; the story of the horse that one of our neighbors bought a few weeks ago and that now seems to be affected with glanders, has been heard so often that it no longer causes us any alarm; we have heard and read much about tuberculosis and its effects on a herd of dairy cows, but since we have never had our own herd wiped out by the disease, although we may have suspected long ago that, for some reason, the cows were not doing as well as they should, we have come to the conclusion that it does not pay to worry about these things and that we might as well let well enough alone. Yet, with this assumed optimistic view of the situation, it is hard to explain why fortunes are spent annually in buying all sorts of patent medicines, drenches, condition powders, and what not, for the treatment and cure of diseases that are for the most part imaginary and, for the rest, usually of such a nature that they are bound to end in recovery if only let alone. Patent stock foods and the wonderful effects that are supposed to follow their faithful use should also be mentioned. The temptation to buy them seems to be irresistible, yet most of them are useless, or worse than useless, sometimes positively injurious, and always enormously high priced.

From the earliest times men have searched for substances that could be taken into the stomach, as a medicine, that would prevent the appearance of certain diseases. Cupping and blood letting at regular intervals were at one time thought to be absolutely necessary as a protection against disease. Now so-called spring medicines and condition powders have taken their places and, from a commercial point of view, they are far superior to the old ways; they can be advertised to better advantage and they make a more profitable business for the manufacturer. All recognized medical authorities, however, agree that a general preventive for all diseases, put up in tablet form or in a labeled bottle, is not on the market, and we may confidently predict that it never will be.

But, notwithstanding this statement, the demand for prescriptions for medicines of this kind persists and I have therefore concluded to make known the ingredients of a prescription of real value. This medicine takes the place of all conditon powders and proprietary stock foods, and in addition it will do much toward preventing the appearance of infectious diseases. It has, also, the peculiar advantage that it cannot be given in an overdose. The successful sale of secret, or patent, remedies is due in a great measure to the fact that their composition is unknown to the unsuspecting buyer. If, for example, it was generally known that Mustang liniment was nothing but a mixture of coal oil, alcohol and ammonia, how many pint bottles could be sold at a dollar a piece? This is the weak point in the following prescription, but this apparent disadvantage is, it is hoped, more than compensated for by the circumstance that, with this knowledge, the user will have the assurance that it contains no dangerous minerals or opiates and that it will not destroy the roots of the hair, no matter how often it is applied. Following are the ingredients:

First—Have a healthy animal to begin with. The use of a preventive presupposes this. You cannot cure a disease with a preventive.

Second—Provide food adapted to the needs of the animal. This must, of course, vary with the species as well as with the age, sex, occupation, season of the year and environment.

Third—Provide pure water and plenty of it.

Fourth—If the animals are on pasture have the latter well stocked with nutritious grasses adapted to their needs, and drain all swamps. If housed, have the buildings arranged according to modern principles, or ideas, of sanitation. Have them warm in winter and cool in summer; provide plenty of fresh air and a proper amount of light, and shut out all direct drafts. The floors should be dry, thoroughly drained and kept clean.

Fifth—Give the animals, or permit them to take, such exercise as is adapted to their special condition or use. When your horses or working oxen are not at work turn them into a large lot and let them take their own exercise. Adjust their rations according to the amount of work they do. Every young animal, in particular, must have a certain amount of exercise; health is impossible without it. Horses should be curried and brushed daily, whether they work or not, unless they are out on pasture. This is as necessary as food.

Mix these five ingredients thoroughly and administer the mixture in liberal doses. When this prescription is used, other spring medicines, tonics and condition powders are unnecessary. Its regular use will keep stock healthy and thrifty as long as it is not directly exposed to infection by the proximity of other, diseased, animals. This danger calls for another remedy which consists in the practical application of a knowledge of the general character of infectious diseases, their causes, their mode of spread and the known means of controlling them.

All infectious diseases are caused by living organisms that enter the tissues, or body, of the animal, grow and multiply there, and by the products of their growth and in other ways, produce the condition called disease. In most cases these organisms are so-called germs. In all infectious diseases for which the cause has been discovered, these germs are either vegetable or animal parasites, most of them being microscopic in size, though some of them are quite large.

In order that an infectious disease may spread from one animal to another it is necessary that the parasites be transmitted from the diseased to the healthy animal. Without such a transmission of the parasite there can be no such thing as transmission of disease. In fact, a disease itself is never transmitted from one animal to another; it is always and only the parasite causing the disease that is transmitted. Further than this, even after the parasite is conveyed to the animal, if it does not enter the tissues, or if the conditions offered by the body are not favorable for its growth and propagation, the parasite perishes and no disease develops. This is what actually occurs in most animals and explains why certain diseases do not attack every animal and exterminate the species. The condition of an animal that thus prevents an attack of disease is called immunity and the animal thus protected is said to be immune. It is a matter of common observation that well fed animals with sanitary surroundings are more likely to possess immunity than are animals under opposite conditions.

Most animals, however, even in the best of general health and under the most favorable conditions, when sufficiently exposed, are subject to attacks of infectious diseases. We must observe special precautions for the protection of these individuals. To do this successfully we must know something about the habits of disease germs and the best means of combating them.

It is impossible, and would be out of place besides, to attempt to detail the life histories of all important disease germs, but a few general facts that apply to all of them may be given. In the first place, the conditions necessary for the existence and development of disease germs outside the bodies of animals must be considered, so that we may make these as unfavorable as possible. We find that organic matter, especially dead organic matter, such as is represented by the droppings and excretions of animals, their dead bodies, and refuse and waste of any kind, are the most suitable soil for the growth of bacteria and other disease germs. Besides this certain degrees of heat and moisture and the absence of direct sunlight are essential to the growth of the organisms of disease in general. On the other hand, the opposite conditions, general cleanliness, lower temperatures, dryness and the presence of bright sunlight retard or prevent the development of the germs of disease. These same conditions are conducive to the health of higher animal life. Collectively we refer to them as good sanitary conditions. But even the best sanitay conditions, in the strict sense of the word, are not an absolute preventive against infectious diseases. Infectious diseases will make their appearance in the best stables and pens.

It is therefore necessary, aside from providing good sanitary conditions, to protect our animals against the introduction of diseases, that is, their germs, from localities where they are prevalent. Efforts expended in this direction, considering the slight expense, are more fruitful in their results than any other single operation on the farm. Every farmer and owner of live stock should take the same measures to protect his farm from invasion by disease that a state live stock board takes for protecting a state from the introduction of animal plagues from other countries. Work of this kind by a live stock sanitary board involves many difficulties and the expenditure of large sums of money; yet it is successfully accomplished and is a profitable investment for the state. The individual farmer has the advantage over a state or government organization; he is in a position to be perfectly familiar with all conditions existing on his farm; he may impose the most arbitrary quarantine regulations, and is, therefore, complete master of the situation.

Few of us realize the importance of this work or have a knowledge of the good that may be done. We do not appreciate protection from an enemy until we have made its acquaintance. Our recent experience with foot and mouth disease should teach us a lesson. Foot and mouth disease is one of the milder types of disease. Though it spreads from animal to animal with extreme rapidity, it runs its course in a very few weeks and almost invariably ends in recovery. Fatal terminations are rare. Yet our National Congress considered it wise to appropriate half a million dollars for the extermination of the disease after it had made its appearance on a few New England farms. Thousands of cattle, besides sheep and swine, were sacrificed in order to prevent the disease from gaining a general foothold in the United States. Mild as the disease is, compared with other affections, no expense was considered too great to exterminate it while this was still possible. The individual farmer and stock owner should not fail to learn a lesson from this. If the stamping out of foot and mouth disease had not been looked upon as a good business principle, and a profitable investment of half a million dollars, the necessary funds would never have been appropriated.

It is true that other diseases that could be stamped out with the same assurance of success exist in this country, but they are already so widespread and well rooted that a similar mode of procedure would involve the expenditure of enormous sums, compared with half a million dollars.

The state of Massachusetts spent two hundred thousand dollars in one year in an attempt to eradicate tuberculosis, but at the end of that time only a fair beginning had been made. Yet tuberculosis is rare in Massachusetts when compared with conditions that exist in some European states where, in large districts, from one-half to two-thirds of all cattle are infected and where in some states thirty per cent. of all cattle killed for food have the disease.

The losses produced by these conditions are enormous and the problem of controlling the spread of the disease, to say nothing of eradicating it, is something staggering.

Tuberculosis exists in every state of the Union, but to what extent it is impossible to make more than an estimate. It is by no means as common as it is in Europe, but it is safe to say that if the disease is neglected it will be only a question of time when we will have to face the same conditions. This is one of the greatest problems that our live stock industry will some day be compelled to face. For the individual, however, it is a simple problem, and no good business man would hesitate as to the best course to pursue. Where tuberculosis exists in a herd of fifty or sixty dairy cattle, it is a rare thing to find less than ten per cent. of the animals affected, and in many cases that have come under my own experience the disease had spread through half the herd before the owner suspected its existence.

A tuberculous cow assimilates less food and gives less milk in proportion to the amount of food assimilated than a healthy cow. She endangers the health of other cows, injures the reputation of the herd, is a drain on the profits of the dairy and discourages the owner who, sooner or later, must discover her real condition. Would any good business man tolerate such an animal, or conditions which produce such animals, for an instant? We know that he would not. Yet this practice is a very general rule with the dairy herd.

Some owners of cattle who know that their herds contain infected animals will not avail themselves of the opportunity of having their herds tested with tuberculin by the State Board of Live Stock Commissioners, free of expense, under the condition that all infected animals be destroyed and the remaining healthy ones be protected from future exposure by observing certain precautions in buying new stock. They seem to think that the state ought to buy their diseased animals and pay them a big round price for them. This is done in some states, although the size of the price is somewhat adjusted. It should be done in Ohio, but not for the sole benefit of the owners of tuberculous cattle; it should be for the good of the live stock industry of the state, for the protection of our healthy herds against a rapidly spreading evil, as well as for the protection of four million people who are entitled to food products from healthy animals. The communicability of tuberculosis and other diseases to human beings should also be considered though we cannot discuss this now.

As far as the live stock industry of the state is concerned, and considered from a purely economical or business point of view, it is simply a question of whether it pays to go to any trouble or expense for controlling these diseases, or whether it is better to let them take their course. There can be but one answer to this question, and since we not only know the enemy, but are acquainted with means for overcoming it, the future will be what we make it. The men that are engaged in the live stock business must solve these problems for themselves. The function of the State Board of Live Stock Commissioners, in this connection, is to assist in their solution by pointing out existing dangers,

advising as to the best methods to adopt, and to make and enforce such regulations, not in conflict with the rights of individuals, as the welfare and the safety of the general public demand.

The President: Friends, I am sure we would be glad if we had a long time to discuss this excellent paper that has been presented by the speaker. We have not very much time, so please be brief with your questions and statements. The doctor would be glad to answer any question that you would present to him. He is here for that purpose, and let us have a lively discussion of this very important subject.

Mr. Reuben Rankin, of Pickaway county: I want to ask the doctor if I got his language correctly, when he said all animal diseases excepting swine diseases are communicable to the human family.

Dr. Fischer: No; but the list that I named all excepting the swine diseases are communicable to human beings. I named four or five of these diseases.

Mr. Rankin: Another question. Is there such a disease in the swine family that corresponds to the typhoid fever in the human family?

Dr. Fischer: It is hard to answer that question directly without knowing just what you had in mind when you asked it. There are several diseases that, in certain respects, affect swine in a similar manner that typhoid fever affects human beings, and swine plague is one of them. The causes of these two diseases, however, are distinctly different, and one of these diseases can never give rise to the other.

Mr. Black, of Preble county: Is there any way by which a farmer can detect tuberculosis in his horses or cattle—how can he detect tuberculosis in his stock?

Dr. Fischer: Tuberculosis is sometimes very difficult to detect, especially in the early stages of the disease and before any marked symptoms have appeared. This explains why the disease may appear in a herd and affect a large number of animals long before the owner suspects its presence. It is impossible for the farmer, or even the experienced veterinarian, to recognize the disease in its first stages by ordinary means of observation. The only reliable means of recognizing the disease in any of its stages, excepting the most advanced stage, is the use of tuberculin. Tuberculin should, however, not be used by the farmer himself, it is a reliable means of diagnosis only when in the hands of an experienced man.

I wish to call attention, here, to what the State Board of Live Stock Commissioners is doing to aid the farmers and owners of dairy cows to rid their herds of tuberculosis: Any owner of a herd of dairy cows, who has good reason to suspect the presence of tuberculosis among his animals, may request the board to make a free tuberculin test of his herd. The conditions under which these tests are conducted by the board are as follows: All reacting (affected) animals must either be destroyed at once, and their carcasses burned or buried, or, if any of the reacting (affected) animals are fat and in good condition for slaughter, they may be shipped to any abattoir, or slaughter house, where inspectors of the Bureau of Animal Industry, of the United States Department of Agriculture, are stationed. Here the animals are slaughtered under the supervision of competent meat inspectors, who determine whether or not any of the carcasses of these animals are fit for food. Animals in advanced stages of the disease are destroyed, those with slight and only local affections are permitted to be sold as beef from healthy animals. This plan is a perfectly safe one and insures a better quality of meat on the open market than the average which is offered us and which may be served to us at any hotel, or in our own homes, when we are compelled to purchase our meat from sources that are absolutely without control of any kind.

After the removal, or disposal, of affected animals after this method, the owner of the tested herd must disinfect his premises according to rules prescribed by the board, retest his herd after six months or a year, and thereafter observe certain precautions, such as purchasing only tested animals, etc., which will insure his herd against re-introduction of the disease at a future time.

Mr. Rankin: What are the symptoms ot the disease?

Dr. Fischer: That is a difficult question to answer. In the first stages of the disease there are no symptoms that we can detect, but in the later stages the most common symptom is a general disturbance of the nutrition of the animal, the animal becomes what we call "run down." Cough is a common symptom, but is not always present, especially in the first stages, and it may, of course, also appear as a symptom of some other disease. Some animals, even in an advanced stage of the disease, show no symptoms that would lead us to suspect the presence of tuberculosis. The tuberculin test, together with a careful physical examination, is the only reliable means of recognizing the disease.

Dr. Brown: Mr. Chairman, I have had some experience in observing the government test in Great Britain for tuberculosis. I have found that many apparently healthy animals react to the action of the tuberculin; react vigorously. They are rejected. They continue to fat well and do well and die of old age with perfect health apparently. There are other animals that do not respond to the tuberculin test and are accepted and shipped, exported from Great Britain, brought to this country and die of tuberculosis. Now, the explanation of that, by some of the surgeons, some of the government veterinarians, is that in those cases that react and remain healthy the tubercle bacilli have become encased; that is, nature has built up a wall around them, so that they have no action and are harmless, probably for years, but it has never been explained to me why those that do not react may be tubercular. I would like to ask the gentleman whether or not the state veterinarian, or other government official, in examining a herd could diagnose conditions other than tuberculosis and spare those animals? Or will they all be slaughtered, and how is it that individuals that have tuberculosis, apparent from the symptoms, and apparent also from their subsequent history and death, what is the explanation of their non-reaction? What I want to know is whether there is any way of ascertaining whether the tubercular animal is harmless and whether that animal can be spared.

Dr. Fischer: I want to say, in the first place, that tuberculin and the tuberculin test are valuable and reliable aids in diagnosis in the hands of the experienced only. Further than this, tuberculin alone cannot always be relied upon in making a diagnosis, its use must be supplemented with a careful physical examination of every animal tested, as well as a consideration of the history of the herd and of the individual animal. The characteristic rise of temperature, following the injection of tuberculin into a tubercular animal may be very pronounced, or it may be very slight, and in some cases, especially when the disease is well disseminated through the body, there may be no rise of temperature at all.

Again, it must be supposed that at least some time must have elapsed after infection has taken place, and before sufficient changes have occurred in the tissues of the animal, before the injection of tuberculin can produce a reaction in the animal. When large herds are tested, and when the disease has existed for any length of time in such herds, we always find that different individuals are affected in different stages of the disease, depending on the length of time that they have been infected. As a result of these conditions we must always expect to have animals present in the very first stages of infection, others in more advanced stages. Animals in the first class will not react, but if tested at a future time, say six to twelve months later, they will react like any other infected animal. The omission of the second test to detect animals that escaped the first test of a herd in which tubercular animals have been found, explains the appearance of tubercular animals in tested herds, that have not been exposed to re-infection since the test. On the other hand, no matter how many times an animal has been tested with tuberculin and found free from tuberculosis, subsequent infections are always possible and must account for the other infected animals that appear in a herd that has once stood the test.

Sometimes animals in advanced stages of the disease do not react, for reasons that cannot be discussed now, but it should be said that a careful diagnostician who is experienced with this disease can nearly always detect such cases without the aid of tuberculin.

Sometimes animals affected with tuberculosis make an apparent recovery, perhaps a perfect recovery, but these cases are exceptions and cannot be considered in taking measures for the eradication of the disease.

The President: We will have to call the discussion very soon and we do so with reluctance. I would like to hear a more lengthy discussion of this subject.

Dr. Brown: Well, I have every confidence in the speaker's ability to explain these things and make them clear to us. but I would like to know whether or not we are in danger, notwithstanding Professor Koch's assertion that there is no danger of infecting our families from tuberculous animals. It will be well for us to understand that some cattle, in the advanced stage of tuberculosis, are immune to the tuberculin test. Now, it is evident to the mind of one who observes that the animal manufactures sufficient of an antitoxin in itself to render it immune to tuberculosis, but if an animal has been infected only recently by an active tuberculosis, it is not apparent to us why they will not react. Now, there is a strong probability that the tuberculin test is not reliable. There is a strong probability that if it is reliable the material used is not reliable.

Now then, we see that it fails, not to any exceedingly large extent, but to an extent that is extensively appreciable wherever it has been used. It is questionable whether a farmer who is raising live stock does not suffer a great loss of money in submitting them to the officials of the state who have no interest in them, and run the risk of being literally bankrupted by allowing them to be butchered and cut to pieces as a result from the reaction of a test that is not demonstrated to be absolutely reliable.

Dr. Fischer: As far as the reliability of the use of tuberculin for detecting tuberculosis in cattle is concerned, we have nothing upon which to base an opinion except the results that have been obtained from the testing of hundreds of thousands of animals, healthy as well as diseased, in this country and in Europe, especially in Germany, France and England. From these results we can arrive at but one conclusion and that is, although the use of tuberculin does not give infallible results, when in the hands of an experienced person it is a more reliable means of making a diagnosis of tuberculosis than any other means for recognizing any other disease known. Not only this, but it has been demonstrated over and over again that herds may be freed from tuberculosis by the use of tuberculin, and that this is the cheapest, and in fact the only practical method, of accomplishing this result.

Dr. Brown: Just one more question. I hope simply to bring out something that will be a help to us. The fact that we would like to know is like this: In your experiments, when cattle have been slaughtered, how many have reacted that have not manifested the disease after slaughter? If there is anything in your experience from which we could get at the exact extent of this we should like to hear it.

Dr. Fischer: I could not give exact figures in answer to this question, but I believe that it would be safe to state that we are always liable to an error of from one to two per cent. in either direction; that is, in a herd of one hundred animals it is possible that one or two tubercular animals would not react to the test, or we should fail to detect them for some other reason, and on the other hand, it would be possible that a healthy animal would occasionally be sacrificed. Sometimes our results are more accurate, and at other times they are less so. In any case, however, these risks are very slight compared with the results obtained in the end. The use of the tuberculin test sometimes results in the destruction of a valuable animal, which upon post-mortem examination is found to be free from tuberculosis, but frequently affected with some other disease. In such cases, however, the loss is insignificant compared with what it would amount to in the end if the tuberculin test was not used and the disease allowed to spread to the rest of the animals in the herd.

Another fact, in connection with the finding of apparently healthy animals among those that have reacted, should be remembered:

It is possible that some reacting animals have the disease developed to such a slight extent that it would require a very careful search by one that is perfectly familiar with the anatomy of the ox, and knows just exactly what he is looking for, in order to succeed in finding traces of the disease. The mere circumstance that the minute tubercles that occur in the very first stages of the disease cannot be found, or have not been found, does not, by any means, prove conclusively that they are not present. When an animal has once reacted the probabilities are that the disease is present, and herein lies one of the chief virtues of tuberculin.

The President: We will have to close the discussion. We are glad that the doctors so nearly agree.

The next subject is "Success in Swine Breeding." It will be by a gentleman whose voice you have heard before. We are glad that he is here. This subject is one that is very interesting to us, no doubt, on account of the profit that has been brought to us through the industry. Now, let us remember that as individuals these creatures, swine, are more remarkable than any other creatures. It was one of them that was the possession of an Irish brother. It was a very silly pig and one day he carried it a full bucket of slop, and that silly pig drank all the slop and then got into the bucket and licked it out.

"Success in Swine Breeding" is the next subject, to be discussed by Dr. McNeal. F. B. McNeal, Troy, Ohio.

ADDRESS BY F. B. McNEAL.

Mr. President, Ladies and Gentlemen:

The subject for this hour, in the manner in which it is stated, is so wide in its scope and so varied in its application that its discussion in the time aloted must be very cursory, and the time I have been able to give to its preparation will render my treatment of the subject very superficial, indeed. The success of swine breeding, in the past, means almost the entire value of the hog as a factor in the industrial world at the present time.

There is perhaps none of our domestic animals that have undergone so great a change by reason of man's developing power as the hog. The massive, symmetrical and beautiful animal of today, and the healthful, savory and toothsome product of his carcass have no counterpart in the repulsive animal, and the unpalatable flesh of the wild pig from which he sprang.

To trace the gradually increasing commercial value of the food products derived from the hog as well as the increased consumption throughout the world by reason of the improved quality of the product, would require a volume in itself. Last year in six cities of our own country alone the trade in hogs and hog products amounted to more than six hundred millions of dollars. These immense money values have arisen from the combined influence of breeding and feeding of the animals.

While it is almost impossible to separate one of these factors from the other in calculating the money value of the improved stock, no one will deny that, without the scientific application of the principles of breeding through many generations and by years of patient toil and study, there could have been no adequate return for material and labor expended in feeding. In the further discussion of this topic I shall endeavor, so far as may be, to discuss the subject with reference to the improvement of the animal by the "breeder's art" rather than the results of feeding the animal after it is produced.

The word "breed" applied to animals means the varieties of domesticated animals. Breeding then would mean the art by which breeds are produced. Since a breed is a variety that variety must include a number of animals possessing certain characteristics or peculiarities, which are transmitted to their offspring. It is therefore apparent that the law of heredity or "that like produce like" must hold good, or the existence of breeds would be an impossibility.

Yet if this law was absolute, namely, that in all cases the offspring was identical with the parent, it is evident that neither by man's interference nor by the operations of nature, could a breed or race arise. The general law then is "that all organic beings shall perpetuate their species by reproducing their kind," and the modifying principle, that in nature this law is subject to continuous and slight variations. Thus these two principles become the foundation upon which man can exercise his intelligence, by selecting animals possessing similar and more desirable variations and mating them to produce an improved animal.

The law of heredity, the variation of that law and the power of selection are the three great principles which render the art of breeding practicable. The force of inheritance, either in the reproduction of types already in existence, or in the continuance of sports, or variation of long standing species, is so great that it becomes a marvel in the history of organic life. Another marvel in the variations of heredity is that injurious peculiarities are just as likely to occur as advantageous ones, and are just as easily reproduced or perpetuated. The same peculiarity, being an improvement, may be carried to such an extent that it becomes a detriment instead of an improvement. Thus Bakewell, the father of all breeders, improved the fattening qualities of Shorthorn cattle, but carried the breeding to the extent that the propensity to lay on fat became a detriment instead of an advantage, and his cattle accumulated great bunches of fat to the detriment of the other qualities of the meat. Again a variation perpetuated may be an improvement at one time and an actual injury at another. Thus in our hog breeding thirty years ago when lard oil was almost the only lubricant for machinery, when lard oil lamps and stearine candles formed most of the light for our dwellings, and when lard was so largely used in pastry cooking, when lard sold for three or four times the market price of hogs, then the improved hog needed all the fat you could load him with; now all this is changed, and the less percentage of fat to lean meat the more desirable his carcass will be. The mating of desirable animals of fixed type to give uniformity and prepotency to offspring; crossing and recrossing of animals to get rid of undesirable characteristics; continuing this process indefinitely to prevent reversion to original types requires the closest observation, patient toil and the most profound thought of the deepest thinkers of today.

Not every man can become a successful breeder; no more than he can become an eminent financier or a profound judge.

The improvement of the hog by the application of the rule governing successful breeding is a matter of comparatively recent date.

In some of the European countries, notably in Ireland, England and Denmark, for a period of two or three centuries, in circumscribed localities under almost unchanging environment and by continuous unconscious selection, the "Irish Grazer," "The Danish Belted," "The Berkshire," "The Yorkshire" and a few others have become fixed breeds. But it has remained for the United States during the last three-fourths of a century to become the pork purveyor of the world.

The extent of our territory, the advantage of climate and the variety as well as the almost unlimited quantity and cheap production of our feed stuffs have rendered this economic achievement most easy of accomplishment. In this attainment the sagacity, energy and perseverance of our breeders have not been wanting.

Not only have they taken and improved the breeds that have come to us from abroad, but they have struck out for themselves and within the memory of men now living have produced at least three breeds that have taken their places at the very forefront of economic and profitable pork producers of the day, and number in their ranks the king breeding hogs of the world.

The rapid strides in perfecting these new breeds and the formation of record associations have been phenomenal during the last twenty-five years in this country. The energy and the enthusiasm which has characterized the efforts of the champions of each has awakened a new and a deeper interest in the minds of the general stock-raising public which has resulted in a better animal, at a less cost, than was thought of thirty years ago. The great corn and grain belt of this country has been the center of this contest and improvement.

Today a better hog, heavier in weight and of vastly superior quality of meat is produced at the age of nine or ten months than was formerly at sixteen to eighteen months. This enthusiasm, however, has not at all times been an unmixed benefit.

Economy of production and excellence of quality have sometimes been sacrificed. In many cases, owing to the cheapness and abundance of our corn crops, has led to the production of bunchy fatness which has in a measure destroyed the symmetrical form of the hog and depreciated the quality of his carcass. The necessary in-breeding to rapidly fix the type and prepotency of our hogs, has resulted in a want of prolificacy that has greatly reduced the profit and popularity of some of our breeds. The fads and fancies of some breeders have exaggerated points of little or no importance, to the exclusion of others of excellence and profit. A white spot on a black hog, a black spot on a white hog, or either of them on a red hog, has by some breeders been considered a matter of greater importance than whether there were two or ten pigs in the litter. Another exaggerated discredit is the lay of the hair.

In the Poland China breed we have as one of the points of excellence in our standard scale, the requirement of a full coat of straight hair. This point counts two in one hundred in the scale, yet many breeders will overlook every other point of excellence and utterly condemn an animal possessing the highest qualities because of a few hairs on his back that may happen to be curled the wrong way.

To me some of these things seem ridiculous, yet if we would be in the swim we must cater to these whims.

Another factor that has entered into the success of hog breeding in this country in recent years is the disposal of pure bred hogs at public auction. These sales have resulted in great good in many ways. It has led to more extensive advertising, and in this day and age no man's goods get to the front without advertising in some form. They also bring together greater numbers of breeders from distant parts of the country, who, by the exchange of ideas, thereby equip themselves for a better pursuit of their calling.

I believe better prices have been obtained for pure bred hogs by reason of this system of selling. Here again the results are not all advantageous. In many instances, what are termed "boom prices" have been inaugurated that have been a detriment rather than an advantage to the business. If I have a hog and my friend in Illinois has one, we desire to exchange, it matters little whether we stipulate a price of five or five hundred dollars on our animals, except as it is an incentive for some other breeder to buy at advanced prices.

The allurement of selling a hog for a thousand dollars or upward has tempted many a young or inexperienced breeder to purchase at prices that could never be realized afterward, thus entailing loss and sometimes financial ruin to the breeder. The rule of "You tickle me and I'll tickle you" has been applied about in this way: You tickle me twice and I'll tickle you once. By these boom methods the price of breeding hogs has been pushed to twenty, thirty and as high as thirty-five thousand dollars for a single animal.

Such enormous prices can but have an injurious effect upon the great body of breeders, because it draws a line around a few blue blooded aristocrats, and the prices thus obtained must be so many hundreds of times divided before they can reach the breeder and feeder who raises hogs for market, who after all is the final consumer for all the products of the breeder's art.

These are a few of the successes that have attended the breeding of swine in the past and down to the present time. But as we stand upon the threshold of the future, what shall our success be? Mainly what we make it.

In the past the great body of breeders were also the feeders of hogs for the market, but in these days of specialization I believe the time has come when the two should be separated. Hogs raised for market need a different feed, a different environment and different care from those that are raised for breeding purposes.

Though there will always be some market hogs that are good enough for breeding purposes, and there will always be some breeding hogs fit only for the butcher's block, yet I believe the best results will be attained by a concentration of effort in one direction or the other.

If the meat consumers are to be the ultimate source of revenue and the final foundation upon which the structure of the breeder's art shall be built, it becomes doubly essential that we study well what kind of pork the consumer wants. The cattle breeder may combine with his beef the dairy product, the sheep breeder may combine with his mutton his wool product, but the hog breeder must rely on his food product alone for his revenue.

In order therefore to attain the greatest success, the swine breeder must furnish the pork raiser with an animal that will produce the tenderest, juiciest and most savory kind of meat, and at a price that is within the reach of every class of citizens in the land. That is, make your product so good that everybody will want it, and so cheap that every man can buy it. The hog then will make the greatest number of pounds of edible meat with the least quantity of food, and in the least possible time will bring the greatest success to the swine breeder's art. The animal that can produce these results must have certain characteristics upon which the breeder may build. Among these are individuality, intensiveness, prepotency, prolificacy, vitality and docility. The individual form of the ideal hog has been variously described as to the shape of the ham, the arch of the back, the depth of the side and the spring of the rib, etc.

I shall attempt to describe my ideal of a perfect bodied hog as follows: The body of the hog, exclusive of the head and feet, should as near as possible fill the measurement of a solid, whose sides, ends and top and bottom are exact parallelograms and whose opposite sides are exactly equal. The length, depth and breadth of this solid should be in the ratio of seven, four and three; that is, if the thickness is eighteen inches the depth will be twenty-four and the length forty-two inches. This gives the length as equal to the sum of the depth and thickness. The desirable variation from this measurement is a slight arching of the back and a slight pendency of the belly. The deficiencies most difficult to supply are deficiency in the flank and narrowing of the lower side lines.

Tensiveness of breeding means a long continued mating of animals to procure and fix the ideal type, thereby producing uniformity in the offspring. Our ideal hog should possess prepotent power, for it matters not how perfect his individuality or how intensive his breeding, if he is unable to transmit his good-qualities to his progeny, his usefulness is destroyed. After all our rules for breeding and all our powers of selection, there remains a mystery about this prepotent power that has never been explained and cannot be determined except by a trial of the individual. Ideal Sunshine was the producer of more high-class hogs than any other of his kind in Ohio, yet his litter brothers have never been able to produce better than the ordinary hog. Nine-tenths of all the prize winners at all the principal fairs of this country, during the past four years, have been the descendants, either direct or remote, of a single hog. Yet his full brothers and sisters, even litter mates, have not developed extraordinary prepotent power. This hog has been of immense value to his breed and to the entire hog interests of the country, and I saw a half interest in him sold in the auction ring for a little more than eighteen thousand dollars.

Prolificacy is one of the essentials to success in hog breeding. It matters not what we as professional breeders may think of the number of pigs that constitute a profitable litter, it is certain that the producer of market hogs wants and for his profit must have good large litters; if the business is to be prosecuted with success, we must furnish that kind of stock.

Vitality, while perhaps one of the most difficult to describe, is one of the most essential qualifications of the good hog. By vitality I do not mean ability to withstand the biting winds on the north side of your straw stack during all the months of winter, nor to be able to engage successfully with his fellow in a battle of two hours' duration, neither do I mean that kind of vitality that would enable him to lead you or your dog in a race over half of your farm on a hot day without suffocation; but rather that kind of vitality that enables him to vigorously attack and devour the rations you give him, and to thoroughly digest the same; to respond promptly and without urging, to every call you make upon him, get up readily and without apparent effort; in every movement giving evidence of energy and vigor, that regal carriage that stamps him as monarch of his kind.

Vim, vigor and victory is an alliteration as applicable in this connection as it was a few years ago with a certain class of politicians.

Docility is no less an essential quality of the successful breeding hog. Lack of this quality is expressed when we say he has no sense. The hog that meets you with elevated nose and champing jaws, greeting you with a bellowing snort, either shows you his heels and does not stop until he has reached the farthest corner of his enclosure, or turns sidewise and comes at you for war when you wish to drive him from one lot to another, immediately finds it necessary to go in the opposite direction; or takes delight in seeing how high a fence he can climb. These are hogs without sense and there is no sense in having them when it is easier to have better ones.

The hog should be docile, but not sluggish; he should be tractable, but not lazy. He should come when he is called, go where he is told and stay where he is put, be easily handled and never cross.

Docility and amiability is doubly desirable in brood sows, for this characteristic alone sometimes saves an entire litter of pigs.

These are some of the characteristics which we believe go to make up a desirable hog, one that will meet the requirements of the day. When they have been attained it will then be time enough to look after the size and tip of the ear, the number and location of the spots or the color and curl of the hair.

The combining and perpetuating of these qualities is the work of the individual breeder, and upon his ability to do this must rest his success in swine breeding.

In achieving this success his sagacity, judgment and labor should be exercised in four principal divisions, namely, selection, feeding, environment and care.

In selecting our stock our first object should be individuality. Always keeping in mind the conformation of the pork producing animal, each individual will select the type of animal that nearest meets his judgment and fancy. Let me say here that without a clearly defined ideal and a fixed determination to carry that ideal into execution, no man ever became eminently successful in this or any other calling. Having determined the individual we should look next to the breeding; this should run through a long line of successful ancestry. Our selection should be like the Jersey cattle that a Dutch neighbor of mine sold at administrator's sale. Every time a particularly desirable cow was brought out the old gentleman would exclaim, "That is a good one; she's got a long pedigree." Such should be the case with our hog, he should have a long pedigree through desirable lines.

Thus we pass successively upon prepotency, prolificacy, vitality and docility of the animals we are selecting. Having made our selection we come next to the subject of feeding. Feeding stuffs, and the manner of their application to the growth of animals, have been the theme upon which authors have written volumes and scientists have spent their lives investigating. I shall pass the subject here, observing that both from the breeder's and the market standpoint we are admonished to feed more nitrogenous and less fattening foods. The overfeeding of corn in the past has partially destroyed the prolificacy and vitality of our stock. Lard at seven cents and hogs at five cents places our market in the situation of demanding less fat and more lean meat.

Hence we must feed more nitrogenous and less carbonaceous foods. What these feeds shall be is left to the judgment and convenience of each individual breeder. The environment of our hogs shall receive but a passing notice here. The wild hog and the range hog of the past built their nests in the thick undergrowth and tops of fallen trees of the forest. He was a roaming animal. Today his surroundings are different and I believe our success requires that they should be different. I once heard an enthusiastic breeder say that the one all important thing to be given hogs was exercise, after that he would prescribe exercise. This I believe to be a mistake. The blacksmith develops the muscles of his arm by use. The draft horse develops his by the load he draws, but this muscular development is far different from that which forms the tender juicy ham steaks upon your table and mine.

Our hog should have good, warm, clean, dry and well ventilated quarters and just such range and exercise as will keep his blood in proper circulation, his digestion in good condition.

The care of the herd should be as thorough and every detail should be as closely watched as of any business in which we may engage.

The herder should at all times know the location and condition of every animal in the herd. Every critical period should be tided over and every emergency provided for. He who has a penchant for kid gloves and patent leather boots has no place in the care of hogs.

Ladies and gentlemen, I have endeavored in this cursory manner to give you my idea of some of the successes accompanying the breeding of swine in the past and present, together with some of the conditions and prospects for the future. The subject is a great one. The subjects to be obtained are greater. The work will go on. The United States has long since been dubbed the porkopolis of the world. When the late Spanish-American war broke out, the Spaniard in derision called our soldiers "Yankee pigs." They soon found that the United States was not only a Yankee pig, but a Spanish pig sticker as well. I believe the success of swine breeding will continue until the Yankee pig and his products will be stuck into every market in the world. I repeat that when you have improved the quality of your product so that everybody will want and produce it at a price that every man can buy it, then will the final success in swine breeding have been attained.

The President: Friends, we can only grant five to eight minutes for questions and brief statements in discussing this excellent paper—five or eight minutes. I think it an excellent paper, indeed. We want you to discuss it lively for about five to eight minutes and cover this important subject as completely as we possibly can in the time allotted to us. We have other discussions that must be completed before this institute adjourns, and must act upon them and act promptly.

Mr. John Begg: I suggest the postponing of this discussion until after the next paper is read. They are of the same nature. After they are both read they can be discussed jointly and to much greater advantage, and therefore I suggest that the discussion of this paper be postponed until the next paper is read.

The President: If there is no objection we will act upon the suggestion made by the gentleman. We ask that you remain, so far as you can, for the next paper. We will close in plenty of time to allow you to get back by two o'clock.

Music by the Cecilian Ladies' Quartette.

The President: We have one paper by John T. Nicholls, President of The Ohio Dairymen's Association, of Cleveland, Ohio. The Ohio Dairymen's Association has been pleased to give him this important office. He is a farmer and milk producer. I have great pleasure in introducing to you John T. Nicholls, of The Ohio Dairymen's Association, who will now speak to you on the subject of "Ohio Dairying."

ADDRESS BY JOHN T. NICHOLLS.

Mr. Chairman, Ladies and Gentlemen:

I have always had to work under a handicap and expect I always will. I am handicapped at this time by the lateness of the hour, but I am very thankful that I was not handicapped in my introduction. I am very thankful that our chairman introduced me as a farmer and a milk producer instead of a farmer and a milk dealer. I think it is an honor to be called a farmer, for we have all read of the honest farmer, but who ever heard tell of an honest milk peddler?

I never met but one man who had any sympathy for a milk peddler, and he was a physician whom I met a couple of years ago while taking a vacation. Sitting on the upper deck of the steamer Northland, enjoying the morning air and an after breakfast cigar, I got into conversation with a gentleman who asked me my business. I told him I was a milk dealer in Cleveland. He said: "You have my sympathy. I am a physician in New York and make a specialty of the diseases of children, and the young city mother does not show much more judgment in caring for her little ones than a young cow. Many times I have seen a mother take an eight months old baby, set him down on a rug with the nap about a half inch long and give him a rattle box to bite on. The little one rolls the rattle around on the rug, puts it into its mouth and bites it a while; presently the dog comes in, the little one hammers the dog with the rattle and then puts it back in its mouth and chews it again. Next along comes the family cat; the child beats the cat with the rattle box and puts it back into its little mouth again; and of course when the child gets stomach trouble, the mother lays it to the milk man."

The subject "Ohio Dairying" is one of great interest to me, both as a producer and a dealer in dairy products. According to my mother's Bible I commenced the dairy business in Lorain county, August 29, 1863. My father's farm was at that time one of the largest dairy farms in our section of the state, and always carried a large dairy. My father could not bear to see around him poor hungry animals, and many days when we boys were home together our father would say to us, "Boys, don't let the cows remain in the yard too long today, for I would about as soon they would go dry on the inside as to get soaked with this cold icy rain on the outside." When my father lay on his deathbed his last words to me were, "My son, do not attempt anything you can not do, and what you do do well. Take good care of your stock, feed everything all they will eat, and eat up clean." His instructions were good and I have always endeavored to carry them out. The year that I was twelve years old there was kept and milked upon our old farm ninety-six head of dairy cows, and the old records show that for more than ninety days the average of the herd was above thirty pounds per head, which for those days was good milking. There never has been a day since that I have not been engaged in dairying, and have always kept upon my own farm a dairy, and never was a man more happy than I when on a cold blustering winter's night I could sit by my fireside knowing that my cattle were in good comfortable stables, with straw up to their knees and a plenty of good feed before them; and I believe today the farmer is more independent, has more comforts, lives better and has less troubles than his fellow worker in the city; and properly handled I believe a carefully selected well cared for dairy will make a farmer more money than any other branch of agricultural pursuits. But he must be a dairyman, he must love his dairy, study their disposition, their likes and their dislikes, and watch over them as a mother would a new born babe or he will meet with failure; and you will find him sitting on a nail keg in a corner grocery telling that dairying does not pay. Such as he give the oleomargarine and the process butter people a stronger mortgage on the dairy interests of Ohio. Dairying keeps up the fertility of the land and keeps it more productive than any other branch of farming. The dairy farm is of great importance to the dairyman. It should have an abundance of good pasture, while pasture is a very expensive luxury for the cow. It should also have an abundance of good pure water, so that the mother of the milky herd can have what water she wants when mother nature says she needs it. She should not be obliged to wade up to her knees in mud in order to drink filthy stagnant pool water any more than she should be compelled to face a winter blizzard with the rain and hail beating in her face, while she walks sixty rods to stand on the sunny side of a rail fence, while her stronger sister sips a few quarts of freezing water through a hole cut in the ice.

We have all been pleased by the work of the artists when they have pictured a beautiful Jersey herd lying in the shade of the maples on a hillside; or perhaps a Holstein dairy standing under shade trees in a creek, keeping cool and switching the flies away. But what a vastly different picture a snap shot of hundreds of Ohio lanes would make today, where a poor half starved dairy cripples along over the hubs or wades in the mud to their knees, going one-half mile to some creek or pond for their water; and take another snap shot, if you please, of this dairy after they have returned to a dilapidated stable, standing on a bare barn floor with the wind whistling up through the cracks, and a zero gale blowing snow on them. Have you ever seen this picture? I have, and it makes my heart ache to see cows that rightly handled would be an ornament and a source of profit to any man's farm, standing in a stable that is hardly fit to keep hay in, with no bedding under them, shivering with the cold, while their energy goes out to warm the icy water they have been obliged to drink. And the chances are if you could find this dairyman you would hear him saying that he knew the creamery operator was a thief, because his milk last month only tested three and two-tenths and Jones' milk tested four and eight-tenths, and Jones' cows are not all Jerseys.

A few years ago I was riding through the country, not far from your city, and looking at a farmer's cows, which were very poor and dirty, standing in a lane all doubled up with the cold, I said to him, "You do not care for your cows as we do ours." He asked me our methods. I gave them to him, and told him that in the fall of the year on frosty nights our cows were not allowed to remain outdoors, and we never allowed them to lie out in the fall when it was rainy, and after the pastures were short and the weather got cold they were never allowed out of the barn yard. And when the winter weather sets in we only allowed them to be in the yard about fifteen minutes, just long enough to drink; and if it was stormy they were watered in the barn. His reply to me was that he did not believe in this way of wintering cows. "It keeps them just like hot house plants. We turn our cows out in the morning and we leave them out all day, and it makes them tough." I said to him, "You are certainly successful in your undertaking, for you have the toughest looking dairy that I have seen for many a day." Cows should have when possible, water before them in the stable or at least in a good warm barn yard where they can be sheltered from the wind and where the water can be kept several degrees above the freezing point. It is a great pleasure to me to watch a fat, well fed dairy drink their fill of clean warm water, take a turn or two around the straw stack and go back to a clean well bedded stable to begin the work of converting the raw material of the farm into a finished product. The stable must be warm, light and airy. It need not be a bank barn nor a three thousand dollar building in order to make milk at a profit. There are none of the old sayings that are any more true than "Where there is a will there is always a way," and there are not many barns in Ohio but what with a little energy, a few nails, some pine boards or boards cut from native timber on the farm as lining, with straw thoroughly packed behind, can not be made warm and comfortable with practically no expense. It should have plenty of light and ventilation, but do not have boards off or leave the doors or windows open so that the cold wintry winds will blow on the cow, for if you do it will take so much of her feed to keep her warm and keep up her energy that she will beat you at the pail.

Now what about the dairy cow? I think I am safe in saying that thirty-five per cent. of the cows of Ohio are kept at a loss, and the man who keeps them only knows that at the end of the year he has not made as much money as he should. But why hasn't he? Whose fault is it, and how can he remedy it? In many cases the fault lies with the man behind the cow. He has not given her proper treatment, not food enough, or perhaps may have overfed her, but has not succeeded in giving her a balanced ration and perhaps thinks as a dairy cow she is a failure. Yet in the right hands she might have produced ten thousand pounds of four per cent. milk in a year. I do not claim for a moment that all cows can be made valuable dairy cows, for many of them need a wet nurse to raise their calves, but on the other hand many a valuable animal has gone to that home from whence no traveler returneth with her good qualities unheralded, simply because some poor feeder has had the handling of her. But how can he tell what he is doing? There is but one way, he must study his business. He must watch it as a merchant in this age of competition is compelled to watch his business, or he will make a dismal failure of the dairy industry. He must not milk his cows year after year without knowing what they are doing. He must keep a record of their milk individually, and if as matured cows they are not giving him more than seven thousand pounds of milk per year, he must call down his good neighbor and say to him, "She is a good cow, but I have three two-year-old heifers coming fresh this spring and I have not the room for her." Or if the dictates of a clear conscience won't allow him to sell her to a neighbor, hang her up in the butcher shop; get rid of her, for the longer you keep her the less money you will have. It is not necessary to have a herd of registered cows in order to make a success of dairying, yet there is not a question but what with registered stock you are more sure that your heifer calves will make good dairy animals; yet some of the best cows under my observation have been grades. One of the greatest mistakes a dairyman can make, and the mistake that I believe causes the greatest disappointment in the dairy business, is in the selection of the sire. How many dairymen there are who go out and buy a poor miserable scrub bull for from ten to fifteen dollars at a year old, and when his heifer calves grow up to maturity ask why his young cows are not as good as his neighbors, who has carefully selected the sire to head his herd. Do not forget to consider the dam of the sire and the dam of his sire. If their record is good in the production of milk of a good quality, and you cross him with the right kind of cows, you can reasonably expect good calves. Do not be surprised if they do not all make cows that will give you twelve thousand pounds of milk per year, for it would be just as reasonable for a horse breeder to expect every colt he raised to be a Lou Dillon. Many a good calf is spoiled in raising. Do not keep them too fat; keep them in good growing order. I would not let a calf suck its mother, in fact I do not let them suck at all. They will learn to drink when a few hours old better than ever again. I would not feed them whole milk but a few days. Feed new milk ten days, then put one-half separator skim milk with a little sprinkling of oil meal; feed sparingly so that they will be hungry and run their little noses around the bottom of the pail and lick it out clean. Gradually cut out the whole milk and increase the oil meal until they are eating a tablespoonful at a feed. Do not feed too much milk; a gallon at a feed I think is a plenty. When they are eight or ten weeks old they will lick a little bran and oats and eat a little bright clover hay. Keep them in a nice dry box stall out of the sun and away from the flies. Do not spoil your good start by turning them out in the hot sun to wear themselves out trying to find some sweet grass in an old dried up pasture. The good dairymen will provide some green crops to guard against a drouth in July and August. Peas and oats are a favorite on our farm and follow these with sweet corn. In the economical production of milk I think the silo is an absolute necessity. I do not wish to be understood that milk can not be produced upon dry feed, but it can be made vastly cheaper with ensilage. It is a good idea to mix the seed about half and half, ensilage and leaming. Plant thin enough so that your corn will ear well and early enough so that it will ripen, then you will have the feed when matured that will make your January milk as cheap as June. You may dispute this if you wish, but before you do use your pencil and figure fifteen tons of ensilage per acre and forty pounds per day as the ration for a matured cow, and find out how long one acre of ensilage will carry a cow and ask yourself how this compares with pasture. A dairyman must treat his cows kindly if he would secure good results. I was very much interested in the remarks of Mr. Jamison on "Lamb Feeding." He certainly has some very good points, and what is true in feeding lambs can be applied to feeding a dairy. You must be punctual, feed regularly and milk them at the same time night and morning. He said, "If you must sing around the lambs always sing the same song" and then you won't scare them. I would go a little further and say if you must sing go back to the woods where the dairy cow can't hear you. Do not try to beat milk out of them with a milking stool. Don't dog them. I believe many a dairy has too much experience with a vicious dog. One of the best places I ever knew of for a good dairy dog was in the bottom of a pond with a stone tied around his neck. A feed of grain at milking time will make the cows think of you and anxious to get into the stable. The practice of feeding grain while milking, however, I believe to be a mistake. When the cow is being milked she should give you her undivided attention. If you are feeding ensilage you must certainly not feed until after your milking is done and the milk taken from the barn, for if you do your milk will surely become tainted and bad flavors will develop. Above all things, keep clean. The old saying, "Cleanliness is next to godliness" is true in many cases, but in the milk business it is a serious mistake. "Godliness" is a secondary consideration, "Cleanliness" comes first. You must keep your cattle, your stables and all utensils scrupulously clean. No food products are so susceptible to taints and flavors as is milk and its products.

I am glad to see the matter of a State Dairy Inspector agitated, and if the dairymen will not for their own interests keep their dairies in a sanitary condition, there should be a law to compel it. This dairy inspector should be placed in the department of the Dairy and Food Commissioner, and under our present capable and conscientious official he can do a world of good. He need not by any means spend all of his time looking after the dairymen, for there are many dirty, filthy old cheese factories and creameries in Ohio which should be declared a nuisance and be abolished. I have driven by many creameries and cheese factories where the stench was so strong that it would nearly knock you out of the buggy, and further there are hundreds of milk depots where milk is sold for the invalid and the infant that is a menace to public health. I dare say there are dozens of milk depots in Columbus that if a mother could see the filthy conditions and circumstances around them, she would not feed the milk handled by them to her little one any sooner than she would feed it strychnine. Another thing that should be stopped is the practice of the little milkman bottling milk on the street. Many times have I seen the little milk peddler pick up a bottle at one house and fill it and leave it at the next one. I have actually seen a milkman take a dirty bottle and take the handkerchief from his pocket and wind it around his finger and wipe out the neck of the bottle and then fill it with milk, take a cap from his dirty coat pocket and cap up the milk and leave it for some family to use. If this sort of a thing is conducive to good health, thank you, I prefer sickness. It matters not whether milk is used as milk in the city or whether it is made into butter or cheese, it should be to the dairyman's interest to deliver milk in good condition. "What was crooked, the Lord made straight," was never intended to apply to milk, for if the milk has gone wrong the Lord can't straighten it, nor can the buttermaker make good butter, nor the cheese maker make good cheese. And when poor products are made it eventually comes back to the man behind the cow, and if it is sold at a less price on account of its quality it affects his dividends. Throughout the northeast corner of the state milk is bought by the hundred pounds, regardless of its butter fat contents. I believe from the standpoint of the honest dairyman and the honest dealer this practice is dead wrong. I believe there is just as much sense and justice in paying seventy-five dollars a dozen for sheep, regardless of their age and heft, as there is in buying milk by the hundred pounds regardless of its butter fat contents, which I believe to be the just measure of the value of milk. The practice of buying milk by the hundred pounds is simply holding out an inducement for the production of thin milk with nothing in it but trouble to the man who buys it, and it is far from justice to ask the man who is making five per cent. milk to sell it at the same price that is being paid for three per cent. milk; for five per cent. milk not only makes the buyer his profit, whether it be made into butter or cheese, but also makes up a loss on three per cent. milk. There is hardly a day passes when I am at home but what some dairyman says to me, "We ought to know where we are at." That is about it. It is very important for a dairyman to know where he is at when he is milking ten or twelve cows on his own farm with the help of his children, but it is not necessary for a firm handling one hundred thousand pounds a day to know where we are at. I read an article in the *Ohio Farmer* a few days ago which annoyed me considerably. They were very kind not to mention any names, but it was an insult to me and the house I represent. It claimed that we paid six cents for ten pounds of milk and sold eight and one-half pounds for twenty-four cents. The author of this article could have found out that he was mistaken had he tried, for we were not below seventy-two cents per hundred, and while we were buying one hundred thousand pounds of milk per day, we were selling in bottles at the price he mentioned less than eleven thousand pounds, and the balance of that we made into butter and cheese and sold on the market.

One other bad feature which causes a great deal of dissatisfaction to the dairyman and a great deal of disappointment to the dealer, is the fact that in the early summer months when the market for butter and cheese are both rapidly declining, the dairyman makes his largest flow of milk. It would be much better for the successful dairyman to regulate his dairy so as to produce as even a flow of milk as possible. This is especially true of the territory from which milk is drawn for the city trade. Take for instance Geauga county. There is produced within ten miles of Burton during the early summer months three hundred thousand pounds of milk per day, while today that same territory is not making over thirty thousand pounds, and yet those dairymen will ask why it is that they can not get practically a fixed price for their milk the year round, when all that surplus milk must be made into butter and cheese and sold on the market when it is flooded, and dropping from one to three cents per week. How nice it would be if the milk dealer could go up to the Great Southern Hotel next June and say to the steward, "You must take twenty-five cans of milk per day now; I am making lots of it; pastures are good. Next January I will have only three cans a day." The dairyman must not lose sight of the fact that the law of supply and demand controls the markets of the world, and this is especially true of an article so perishable as milk.

One of the greatest objections to winter dairying is the horrible condition of our country roads, and we should use every effort for appropriations for their improvement. Good macadamized roads are of great importance to thousands of people, and while there are millions of dollars of government money being spent on rivers and harbors and irrigation, let us not only ask for appropriations for the improvement of our country roads but demand it and insist on getting it.

I have endeavored to treat this subject fairly from the standpoint of both the producer and the dealer, and in conclusion, gentlemen, what the dairymen of Ohio need is a little common sense mixed with good dairy education and practical experience. The Farmers' Institutes are doing in my judgment a world of good. They would do more good, however, if the dairymen would go home and put into practice many of the good things they hear. I want to say a few words in regard to our dairy school. There are among our patrons three young men who have taken a ten weeks' course in the dairy school at our State University. Not having bothered you with any figures, I want to give you the figures upon the results of their dairies for the season 1903. Mr. Charles Morton, at Burton, has on his farm twenty-four cows, eight of which were two years old, five three years old and eleven matured cows. They produced him per cow seven thousand one hundred and forty-five pounds of milk at a cost of keeping per year of thirty-one dollars. His receipts from the creamery amounted to seventy-nine dollars and eighty cents, leaving him a net profit of forty-eight dollars per head; considering that eight of this herd were two-year old heifers, I think that you will agree with me that in his case a little dairy school training mixed with practical experience and good judgment is a good thing. The other young men referred to are the Newcomb brothers, who are neighbors of Mr. Morton. The average of their dairy last year in receipts from the creamery was eighty-eight dollars and thirty-three cents per head, at a cost for keeping of thirty-two dollars and fifty cents, leaving them a net profit of fifty-five dollars and eighty-three cents per cow. Their cows gave them eight thousand and sixteen pounds on an average. Mr. Morton's dairy is largely registered Ayrshires, while the dairy of the Newcomb brothers are grade Holsteins. Their milk was sold to the creamery at Burton by the hundred pounds, with a small bonus added for four per cent. milk. A visit with these young men and a little time spent in their dairies will convince the most skeptical that our dairy school is very valuable to the young men, and inasmuch as the farmers of Ohio pay approximately forty-seven per cent. of the taxes, let us ask our legislature for liberal appropriations for our State University, and especially for our dairy schools.

The President: Now, gentlemen, you can readily see that we cannot discuss these excellent papers at this time. May I say that the speech, the address by Brother Judy, will come at 2 o'clock this afternoon? The subject is an important one. Give Brother Judy an audience.

I will say that The Ohio Wool Growers' and Sheep Breeders' Association will meet in Townshend Hall at 7:30 this evening. Some excellent gentlemen will be there for addresses.

Dr. Chamberlain: May I say in behalf of the Committee on Resolutions that they prepared and put in shape all that the different members have suggested to them? The report must be made immediately after dinner, and if any of you desire any resolutions put in on any subject they should be handed to me immediately on adjournment, so that I can see that they shall be incorporated.

I beg to say that the article in the *Ohio Farmer* referred to was not one of my editorials, and I did not happen to know anything about it. I presume it is a communication from some subscriber. We have a part of our paper taken up by communications from different persons which we print as they are sent in. If the gentleman wishes to reply to that article in the *Ohio Farmer,* we extend the privilege to him, and would be glad if he would do so.

Mr. Nicholls: It was a communication. It was not any of the editorial work. I read the *Ohio Farmer* every week and I think a lot of it. (Applause.)

AFTERNOON SESSION, January 24, 2 P. M.

Meeting called to order by the Chairman, who announced a song by the Cecilian Ladies' Quartette.

The President: We are ready for the report of the committees appointed yesterday. First, the report of the Committee on Nominations of officers for next year. E. P. Snider, of Huron county, is chairman of that committee, I believe.

Mr. Snider: Your committee, appointed to nominate officers for the State Institute next year, would respectfully present the names of Mr. Lowell Roudebush, of Clermont county, as President, and Mr. W. G. Farnsworth, of Lucas county, as Vice President. Mr. President, I move that Mr. Roudebush and Mr. Farnsworth be declared President and Vice President respectively for the next year.

The President: You have heard the motion, gentlemen.

Motion seconded by a member.

The President: It has been moved and seconded that the gentlemen named shall become our officers for the next year. Alll in favor give the usual affirmative sign.

Motion carried unanimously.

The President: The next in the order of business will be the report of the Committee on Resolutions. Dr. Chamberlain is the chairman of that committee. I will now call on him to give the report of the committee.

Dr. Chamberlain: The Secretary will read the resolutions prepared, and I will say a single word after they are read.

The Secretary, Mr. Scott, reading:

Resolved, That we demand for our Ohio Agricultural Institutes, as represented by the Ohio State Board of Agriculture, the Ohio Agricultural Experiment Station, the Agricultural Departments of the Ohio State University, and all other State organizations intimately related, due recognition and financial consideration from the legislative and executive departments of our State, in proportion to their magnitude and importance.

Resolved, That the present law known as the Grout Law, taxing oleomargarine, shall remain as a national statute, and urge every farmer, through his representative and senator, to see that it is not repealed, the tax reduced or the law in any way made ineffective by adverse legislation.

We also demand that all laws made for the manufacture and sale of food stuffs for farm and home consumption shall be maintained and revised in such way as shall assure to the consumer purity, and that every package shall have printed on it the ingredients contained and also the percentage of these ingredients.

We also urge the passage of the Grosvenor-Shoddy bill as a just expedient in the interest of both wool growers and consumers of wool goods.

We also urge that every farmer in Ohio shall not kill quail or permit the same to be done on their farms in or out of season.

WHEREAS, It has pleased Almighty God in his providence to remove from our midst our dearly beloved brothers and co-workers, Col. J. H. Brigham and S. H. Ellis;

Resolved, That we as members of the Ohio State Farmers' Institute in our bereavement in the loss of these pioneers of the new agriculture, both of whom have served as members of the Ohio State Board of Agriculture and as active members of the Ohio State Institute force;

Resolved, That we extend our sympathies to the families of the deceased brothers and request that F. A. Derthick give this body a short eulogy on their lives and work, the same to be printed in the annual report of this institute.

W. I. CHAMBERLAIN,
LOWELL ROUDEBUSH,
GEO. E. SCOTT,
Committee.

Dr. Chamberlain: I move the adoption of these resolutions without re-reading and without dividing them. If I have a second, I will say a word.

Motion seconded.

Dr. Chamberlain: Your committee, Mr. Chairman, endeavored not to bring in any resolutions that would not meet with the cordial endorsement of all.

In regard to the Grout law—that now taxes the oleomargarine ten cents a pound, a tax which is virtually prohibitive of the sale of oleomargarine as butter—we would say a bill has already been put in the hands of the committee in Congress reducing that tax to four cents a pound, which pleases the oleomargarine men and will permit them to sell their product in competition with butter. It has been put into the hands of a picked committee, all of whom, but one or two, will report it favorably to the House, and we have got to fight that in the House. The ten-cent tax has been pronounced constitutional by the Supreme Court of the United States. The law is effective. We do not want it changed. It is the thing that protects the butter industry in this state. We simply want the law let alone, and the adoption of that resolution by this body will be a help toward defeating the report of that committee and the passage of the bill, providing we work with our Congressmen to that effect.

In regard to Brother Ellis and Brother Brigham, Mr. F. A. Derthick, Master of the State Grange, will speak briefly, and after that we will call for the passage of the resolutions, unless there is some objection.

Mr. Derthick: Ladies and Gentlemen of the Institute: The committee told me, a little while ago, that they would call on me at this hour this morning for this service. Since that time I have been trying to collect my thoughts and to marshal suitable words to record and express our high appreciation of the great and eminent service of the brothers who have been called from service here to the service above. But I found what you have found, and what we have found before, that we sometimes come to hard places in life, places where language fails us, and where the influences of the hour and moments are of such a character as to make us leave the field of mental discipline and power of expression, and pass to the realms of sentiment and emotion. It is not important, however, what we say at this time. The lives of these men are written in the lives of humanity. It would be impossible to differentiate these two great men because, hand in hand and side by side, for more than twenty-five years, they went forward in tireless devotion in the interests of the cause they had espoused and of the banner they had unfurled. It was my privilege, as it has been the privilege of many here, to be intimately associated with these men for years, while it was impossible, as I say, to separate their work because it merged at so many points. I want to say a word briefly now for Brother Ellis, as we all knew him.

There are many here who have served upon committees of various sorts, and have confidence in him. We always found that Brother Ellis was a man of ideas. He was an originator. He was a man of profound convictions, and he brought those convictions and those ideas to every meeting and to every conference where he was a member, and he stated those convictions in a forcible, clear and unmistakable manner, and he stood by them. Having done that, my pleasant memory of Brother Ellis is that, with rare grace, he smilingly allowed those who entertained other convictions and other ideas to express themselves, and I always found, and you always found, that if his convictions were shaken, if you could get him to look at matters from your viewpoint, he did it graciously and he did it genteelly. But after you had had your say, Brother Ellis' convictions and conceptions of duty were unchanged. He was as firm as the everlasting oak. I have been at Brother Ellis' home. I found that the same spirit of usefulness that dominated and influenced Brother Ellis as he lived before us, and was seen by us, characterized his life always. He did a part of, and he always found time to become a part of, all that went on in the community where he lived. He sat by the bedside of the dying and, hand in hand with those whose hearts were brimming and the ties were sundering, he administered words of consolation. He with them followed their loved ones to their graves and he wept sincere tears of sorrow. He was a useful, all-around man.

And as for Brother Brigham, I feel inadequate to express my appreciation and your appreciation of his services as well as those of Brother Ellis. Brother Brigham was a man of generous and good character. He was an easy man, as we all found him, with whom to work in every department in which he was engaged. But, like Brother Ellis, he brought to the consideration and solution of all questions a broad and cheerful and helpful resource that we did not find everywhere else. Brother Brigham was kind. Brother Brigham was fearless. It was Brother Brigham's fortune, from ocean to ocean, to appear on behalf of agriculture wherever its interests were in hand. In many states of the Union, in Congress, and especially in Ohio, Brother Brigham's voice was always heard when the interests of agriculture were at stake. We have seen Brother Brigham pass through fire, and we have seen him, when the smoke of battle had lifted, standing right where he was when he went in. Brother Brigham, with Brother Ellis, was a man to whom we could all tie and go away, and when we came back we found Brother Brigham had not moved. He was there yet. Brother Brigham and Brother Ellis both turned their backs all their lives upon political preferment. Brother Brigham has said in this hall, and in the hall across the other wing, to legislative committees, when they were being persuaded both ways, he said: "Gentlemen, we don't want you to favor this proposition if it violates your convictions. It is your right and privilege, but we are sure that your constituents demand this, and if you can't carry out their wishes without violating your convictions it is your duty to resign and go home, and let them send somebody who can. But you believe, and I believe, that that is the highest mission of a public man, to carry out the wishes of those he represents." Now, I have been admonished that a few brief words are all that are expected, for when life's fitful fever is over, they have been out and in amongst us for thirty-five years. We shall see their forms no more. Their history is a part of the agricultural history of this state and of the Union for the last thirty-three years, and one can hardly conceive the value of their services unless by comparison. Those of you who can look back to thirty-five years ago and compare agricultural methods used in the farm and the home, with agriculture and with methods in farm homes now, will see written upon every page and in every year the history of Brothers Ellis and Brigham. They are a part of it. They devoted their lives to the interests of agriculture; to the upbuilding of the farm home; to the making of farm life a brighter, fuller, more beautiful thing, and they have gone from us now. They live in memory. We will not forget them. They were united here. They passed hand in hand through this life, devoted to the same great cause, and I believe that their death was but the unlocking of the golden gate to the palace of eternal life, to the house not made with hands.

Dr. Chamberlain: May I say a single word? I think I was closer to Brother Brigham and Brother Ellis than to almost any other two men, and I never saw a mean thing in either of them. I think the highest praise that could be possibly given to two men was given by our Chairman yesterday, when he said these two men were eminently self-made, but that they did not exhaust all their strength in the making of themselves, but left a large surplus to be expended upon the good of their fellow farmers and their fellow men. They were worthy followers of Him who came not to be ministered unto but to minister to others. I renew the motion that these resolutions be adopted.

The President: Are you ready for the motion?

The question was called for.

The President: All in favor of adopting the resolutions as read, will give the usual affirmative sign.

Motion carried unanimously.

The President: The program is very full for the afternoon. Each subject is very important. We have four addresses for the afternoon. Now, I trust that everything will be done promptly, and I would ask that you remain, if you can, until the close of the addresses and the discussions on them. This will be for the credit of our institute, and the good of all of us.

You know that this morning we were unable to hear the address of Brother Judy. His subject is a very important one, and I wish you would give close attention to it. We will now hear the address on "Cultivation and Market of Corn," by Brother Judy.

ADDRESS BY A. H. JUDY.

Mr. Chairman, Brother and Sister Farmers:

We have this afternoon a subject that is one of great importance to a large part of our country and to the world at large. I will present it in just as brief a manner as I possibly can, considering the importance of the subject.

Our subject this afternoon is the care and cultivation and marketing of the corn crop. By this we mean Indian corn. And this reminds me that there has been about as much outcome in the Indian as there has been in the corn by a a little story that I read the other day about Poor Lo and his progress, not only in business but in the spiritual way. He had paid four dollars to a lawyer by the names of Jones, and after he paid Jones the money Lo says "Indian must have a receipt." And Jones smiled and said, "Now, Lo, that is all right for you to have the receipt, but tell me what you want it for." "Well, it's a matter of business," said Lo. "How can a receipt be a matter of business to you?" "Indian die, Indian go up to Saint Peter. Indian ask to be admitted to Heaven. Saint Peter say, 'You pay Jones, the lawyer, that four dollars you owed him?' Indian say yes. Indian have no receipt. Saint Peter say, 'Where is your receipt?' Indian have to hunt all over Hades to find Jones."

Perhaps we will never know where corn originated, unless it is in the translation of the old Aztec manuscripts that were discovered just this week in one of the Indian villages in Mexico. These purport to be a history of the Indians and as soon as I get the translation I will mail it all to you. There might possibly be no better origin for the corn given than you can find in Longfellow's "Legend of the Maize." You know how Hiawatha went out in the woods and that he prayed for four days, and the fourth day Mandamon appeared to him—the youth, dressed in green and yellow with long green plumes above his forehead and heart of gold, and he told the Indian that he should wrestle with him and eventually he should overcome him and subdue him. He then revealed to him the cultivation of corn.

"Lay me in the soft earth,
With the moulded earth about me,
Where the sun will come and warm me,
And the rains will fall upon me.
And then sit and watch me,
Leave no other hand touch me,
And I will spring up again."

You know the story. And the Indian then watched as he was told, kept the place clear from weeds, you know, and all that thing, and his toiling was finally rewarded by green shoots which appeared, and the full grown maize later on. He harvested it and he set before his people the gift of the Great Spirit, the Indian corn. It is a very beautiful story. The book will only cost you ten cents down here at the ten-cent counter.

The corn area of the United States, and of the world, embraces a line that you can describe readily by going eastward to the Ohio river along the northern boundary of Ohio, Indiana, Illinois, possibly Iowa, down through Nebraska, Indian Territory, Arkansas, a little part of Texas, and then in a northerly direction back to the place of beginning. In this corn area there is probably a great amount of ground that will not produce corn properly. Corn is produced outside of this area in the United States, but this is the area that produces the corn product of the world. Notwithstanding that other countries have climate and conditions of soil that compare with those conditions in this corn belt of the United States, they have so far failed to produce a good corn crop. The area has not increased, but the demand is increasing from day to day, caused by the different usages that are being made of the corn product. This fact ought to stimulate us to an increased average of the corn yield because of the increased demand and consequently the increased prices. One result of the Japanese-Russian war no doubt will be to expand or multiply the demand upon the corn crop. It is an ill wind that blows nobody good. With the demands multiplying and with the prospective price rising, if I live to the allotted three score and ten I expect to see wheat and corn change places in the market values of the world, corn commanding the higher figure. With this prospect I do not see any possible chance of old King Corn being dethroned. So valuable then has the corn crop become from the multiplied demand upon it for food, and the elements to life and living, that it will receive increased attention in the future. From the common old corn crop raised simply to produce the mush and corn pone, than which there are yet few better foods, the feed of pigs and the distilling of whisky, it has arisen to the commanding position of furnishing protection to our warships, delicious maple syrups, breakfast foods and dishes and delicacies that could be found from the dining table in the cottage to the Fifth avenue mansion. Corn, like a thoroughbred animal, has become a thoroughbred cereal and will need thoroughbred care and attention in its production.

I will not try to elaborate on all the kinds or usages or conditions of corn in the commercial world today, but I do hope to present to you some thoughts that will enthuse the farmers of the State of Ohio to a more careful management of this the king of all crops.

If you have never carefully selected your seed corn, I pray that you will not let another season go by without attending to this, the most important part and the first essential to a good crop. There is no time spent upon the farm that will yield such wages as that of the careful selection of the corn with which you grow your next year's crop. When the husks are turning yellow, when the largest and earliest ears have sufficiently ripened to permit of safely storing, go to the best part of your best fields with a grain sack on your shoulder, march up and back through the field carefully picking those ears meeting your ideal of the perfect corn.

The variety you grow is of your own choice, yellow or white, small, medium or large. I like a rich yellow, medium sized ear eight or ten inches long, well filled out at both ends, eighteen to twenty-four rows, a solid cob and a deep oily grain. A little practice and you will quickly and with delight, and with scarcely a miss, select your ideal ears as you pass along the rows of standing corn. I insist upon this as the only proper way to select your seed corn, and by selecting it early you have the very richest, strongest and best samples from which to grow your crop. Besides there is no danger from any unexpected freeze blasting the germ, or inclement weather affecting the quality. If I only had one room in the house my wife would expect to find my next year's seed corn stacked up in one corner of it.

However, I do not approve of storing seed corn where the steam from cooking will come in contact with it. Carefully store it in an upstairs room where the atmospheric conditions can be evenly controlled, and the mice and rats cannot get to it—for you will soon find a little friendly association of these creatures will greatly damage your seed corn. Select twice as much as you expect to need.

In order to have the grains as even as possible for planting, I shell the irregular grains from both ends of the ear. Before shelling, however, in the month of April, I make a second selection, taking enough to plant from the very best ears gathered. I prefer hand shelling. This can be done when there is weather unfit to work out and by carefully handling each ear you will be able to discover any mouldy spots or cracked grains that are invisible from the outside, and avoid shelling them in. If you use a machine in shelling you would not know the mistake you are making in allowing these mouldy grains to get mixed in with the better grain. Besides, pieces of cob will occasionally slip into the shelled corn, and at the very moment when you are least expecting it they will obstruct your planter plates. These are only little things to know and to avoid in order to grow a good corn crop.

I prefer plowing our ground in the fall. If this cannot be done, then do the plowing early in the spring. Fall plowing puts the spring work on easy street, gives plenty of time to man and beast, saves many a galled shoulder, wearied bodies and brains by not being crowded and overworked by those unavoidable occurrences that are almost sure to come upon us just to keep us busy.

Besides, fall plowing assists us in disturbing and destroying the insects that had gone to winter quarters, aerating the ground and putting it in a fine condition to receive the seed the following spring.

I know some of you are saying now, "You can't plow my ground in the fall." Well, perhaps you can't, but there is only one kind of ground to my mind that you can not plow in the fall. That is the soil that would be harmed by turning the protecting mulch under it, and will be washed and damaged by being thus treated. All other soils, in my estimation, if put into a high state of fertility, can be safely plowed in the fall. By that I mean capable of producing from seventy-five to one hundred and fifty bushels of corn per acre. Now don't think me excited. We are not half farming in Ohio; we are doing enough work, but we are covering too large a territory. The ideal corn field, to my mind, is a clover sod on a rich soil left grown and turned under, as I have stated, at a depth that would be governed by your locality and your best judgment. I like to turn up a little new or sub-soil each year, just a little for a few years, and then go down say about three-fifths so far, and then a little deeper each year. Ordinarily a spike tooth harrow and a drag are all that are necessary to put this field in good condition to plant. Two harrowings, one at right angles to the other, with the drag to level down before the planter will be sufficient. A seed bed as good as for onions, cabbage or tobacco will be about proper.

I believe that five to ten bushels per acre of corn at least is lost every year in the state of Ohio by planting in half prepared seed beds. It is a shame it is a fact, but the fact remains just the same. I have seen seed beds with clods as big as a man's head all over the surface—good soil, too—capable of producing seventy-five bushels to the acre, and it is absolutely certain that in such a condition not more than forty or fifty bushels could be expected as the extreme limit from such a prospect. The ideal seed bed glides you along smooth and true; your planter runs at an even depth, dropping regularly every hill two, three or four grains if you choose. It does not worry the horses. Every grain is deposited just in the moist earth. Get the idea? And in due time it will appear over that field like emeralds, each hill a gem sparkling in the May morning dew. Choose your own planter and choose a good one; a regular drop, a positive drop, an accurate check. We always check our corn, the experiment showing that there is very little advantage of the hill corn over the drilled.

Your corn planted, as soon as possible with a good spike tooth harrow go over the field. This will destroy any weeds that might be started, besides putting your corn in command of the situation for making growth. We cultivate with a two-horse riding cultivator, four shovels on each side, small shovels, cultivate regularly each week until harvest calls you out. If you are called out for a week or ten days do not disturb your corn again that season. Nine times out of ten you will produce a positive damage to your crop.

Corn cutting is one of the questions that as yet there has been no satisfactory solution given us. We use the corn binder. With this machine one man can cut and bind and shock all the corn that a man is supposed to produce in this locality. With your corn cut and shocked, the question of husking comes up. Now, labor is the crying need. With your corn cut and shocked and bound, you and your hand, or barring the possibility of getting a hand, you and your neighbor can take a team and a wagon in nice weather when you will not damage your fields, and haul forty to fifty acres of corn into the barn yard; rick it up carefully, let it stand long enough to season so that the shelled corn, which you will have from machine husking, will keep, and then with half a dozen of your neighbors helping together, that corn can all be cribbed and your fodder all put into mows and at a cost very little above the old way of doing it. With your mows full of that excellent fodder, you have a hay that will feed you until the time you gather your next year's crop the same way. This solves the hay problem, the corn cutting problem and the corn husking question. As I have said with the increased demand, the corn crop will require more attention. Corn will have more attention because with the increased demand we have a greater incentive for reward. I don't think we will see twenty-cent corn again very soon, regardless of whether Grover is president or not. The increased demand for corn will give a better demand for it at all times, and a better price for it, and there will not be the objection to selling the corn from the farm that there was once, since by leaving the clover on the field we can better spare the grain.

Hence, your corn crop, if you wish to market it in that way, will be a good bank deposit for you to get cash when your needs and judgment decide is best.

Some market their corn through the cattle route and are successful. That is a good way to dispose of it, besides building up the farm. But whoever chooses this way must like his business, for the feeding of cattle requires a great amount of care and labor, besides a man must be a good judge of the business to be successful. We have always taken the pig route. If we needed money we winter feed, if not, we feed the following summer on clover. This has always been to us a source of profit in direct cash, besides enriching our fields. Here are some of the things that I did not intend to tell you at all today. I was going to leave them out of my talk. I will, however, put some of them in and they may possibly answer some questions in your mind.

Now, gentlemen, I am talking to you, because the women don't get out and grow as much of the corn as the men do. I tried to hunt an ear that would average what the average ear of Ohio is today, three ears to a hill, but

I could not get it, but I got one that is twenty-five per cent. too large. That is the average sized ear of the corn raised today in Ohio. (The speaker here exhibits ear of corn.)

If each ear weighed one-half pound the yield would be seventy-five bushels to the acre. That ear weighs just exactly one-half pound. It is not a very large ear. I want you, if possible, to get the idea that we are not getting half enough from our corn fields. If any one wants to examine these ears, they may. These are facts. If you would grow a three-quarter pound ear, which is a very ordinary ear, three ears to a hill on an acre of ground, you would grow one hundred and twelve and one-half bushels of corn. This is a twelve-ounce ear of corn that I show you. That is not anything out of the ordinary. That is a very ordinary ear of corn; a *very* ordinary ear of corn. One pound to the ear will give you one hundred and fifty bushels to the acre. You can pass them around and see them, but I would request that the ears be given back to me. There is a one pound and two ounce ear. That ear is a pretty good sized ear of corn. That is the kind of an ear we are trying to make a possibility right now. It is a possibility, and when we do we will grow you one hundred and sixty-eight and three-quarter bushels of corn to the acre in the state of Ohio. Isn't it worth considering such a crop as that, and isn't it worth working for? I think it is. That is an ear weighing one pound and two ounces.

This corn was grown in Darke county. The good ears are Darke county Mammoth, and are in line with my ideal.

The inferior ears were selected for the purpose of illustrating the yield in Ohio, and are not known to be of any particular variety.

I am not in the seed corn business; I have grown that kind of corn for several years.

A corn field that produces only thirty bushels per acre can give no profit to the renter since it takes fifteen and one-half bushels of number one corn to pay cost of production. Corn producing sixty bushels per acre will give a profit of five or six dollars to a tenant. We plant corn about May 5th or 15th.

We plant corn three feet six inches or three feet eight inches.

We plant corn in moist earth, generally two or three inches deep.

We plow corn three to four inches deep at start and a little less later on.

We have produced three thousand nine hundred bushels on forty-two acres.

We have produced one hundred and eight bushels on one acre.

We crib our corn in rail pens for summer feeding. Where it is most convenient for winter feeding. Should be stored in good place if intended for market.

Harvesting corn as stated does not cut or damage fields and gives a good seed bed for oats or wheat.

The small yield for the state is due to quality and condition of soil; to poor spots in the field; to wet spots in the field; to carelessness in planting; poor seed and indifference in cultivation; poor seed bed; plowing too wet; tramping fields for pasture, and like sins of omission and commission. The remedy I have tried briefly to suggest. (Loud applause.)

The President: We omitted at the noon hour to announce the Jersey Cattle Breeders' Association at the Chittenden Hotel at seven this evening.

Now, gentlemen, we have just a few minutes for discussion. We must finish our program this evening, and therefore be short and brief, and to the point, in any questions that you wish to ask Mr. Judy.

Mr. Reuben Rankin: I fully agree with Mr. Judy in his methods of managing the corn crop, and I am very much in favor of the fall plowing. But there is one place in which we have practiced fall plowing that has not been successful. There is one kind of sod that we have not been successful in plowing in the fall, and that is a stiff timothy sod. We have always come to grief in the spring when we broke stiff timothy sod in the fall, because of the fact that the spaces between the furrows never close up sufficiently but what the sod remains green all winter, and we always have trouble with that strip of sod in preparing the ground for planting in the spring.

Now, that might not be the case with all farmers, but it has been the case with us. All other kinds of ground where it is convenient and available at all fall plowing is a success, because you not only push your work along in the spring, but you can always get a better seed bed. I was in hopes when the speaker was talking that he would speak on the thorough preparation of the soil and the seed bed for planting corn. I was in hopes that every farmer on the floor would have something to say on the subject, because last year was one of the years of all the years of my experience when it fully demonstrated that it was not only best, but almost essential to prepare the ground before you plant.

Mr. Lowell Roudebush: The speaker has placed a very important emphasis upon the production of one hundred, one hundred and fifty, to two hundred bushels of corn to the acre, which is possible in some of the counties of Ohio, as well as of other states, and we lose sight of that, and hence the emphasis that was placed upon the preparation of the site certainly has a very important bearing. I found last year that the farmers in the corn belt proper of Illinois were abandoning cutting up their corn, and were cutting their stalks with stalk cutters, and then were disking the site before they plowed, from the mere fact that they said inasmuch as we conserve the moisture, it is not possible two years out of five to get maximum crops, because without the moisture the thicker we plant the corn, which is indicated by the gentleman's lecture, it is impossible to have that maximum or great yield, and the thicker the corn is planted, the more moisture it is going to take. The factor of moisture is a very important one, if we are going to have the large yield that the speaker has spoken of. It is to this point that I wish to call your attention, as it is very important that we have plenty of moisture. For instance, two years ago at Urbana, Illinois, the experiment station, they were only able to produce twenty-two bushels of corn. The next year they were able to produce two hundred and eight bushels of corn on the same site without any addition of clover, or anything put on it. And hence it was the element of moisture that made the difference.

A member: I want to say this for Brother Judy, that he is not talking through his hat, but is a farmer, and farms the way he told it.

His farm is in Darke county, and he does grow a very fine quality of corn. It is very fine. I believe that Mr. Judy will be deceived, as likewise will many another, who has his hopes fixed upon one hundred, or one hundred and twenty-five, or one hundred and fifty bushels as a possibility in the field crop of the state of Ohio, or as a field growth in any other state in the corn belt. We were told yesterday by the man who gave us such an excellent address, that there were a great many things that entered into the growth of corn. If these things are deficient, and are not present in the soil, then it makes quite a difference. All of the elements entering into the constituent elements in the ground to produce a large corn crop must be present and all enter in. I believe that while hope springs eternal in the human breast, and we always look forward to the very best, we must not get discouraged if we cannot grow more than eighty bushels of corn to the acre, because that is a very good yield.

A member: I notice that the gentleman in his remarks and estimates, figured on three ears of corn to every hill, and every hill perfect. I would like to know if he ever saw such a yield as that. It would be very instructive to me. I never did.

Mr. Judy: If you will take the United States Blue Book on Agriculture, you will find where a field of ninety acres in Pennsylvania yielded one hundred and thirty bushels of corn to the acre. So you see there is some hope for the farmers in Ohio to do the same.

Dr. Chamberlain: We are all of us ashamed of those mean little nubbins that he showed us a while ago. You can't get a man in this audience to admit that he ever raised such nubbins as that on his farm. (Laughter.)

Now, figures won't lie, they say, but liars will figure (Loud laughter), present company excepted. (Laughter.) What I mean to say is, I don't believe in the statistics of Ohio that you will find thirty, or thirty odd, bushels to be the average yield of the state. I don't believe it, and as Coleridge said, a lady said to him, "Why, Mr. Coleridge, don't you believe in ghosts?" He said, "No, madam, I have seen too many of them myself." And the reason I don't believe in the statistics of Ohio is that I had charge of them for six years myself. (Laughter and applause.) And I know that they were not given in accurately. On the same sheet on which we entered our cattle at one-quarter of what they are worth, and our horses at one-third of what they are worth, and our lands at about thirty per cent. of what they are worth, we are requested to state our crop average, and the average farmer gets so in the habit of lying seventy per cent. on the rest of his tax duplicate that he can't help it when he comes to give the estimate of his yields. (Loud and prolonged laughter.)

Now, I don't believe in any thirty bushels to the yield on the average. I don't believe in any eleven or twelve bushels of wheat to the acre on the average. I can't get it to grow that way on my farm. The blamed stuff will grow thirty-five or forty bushels to the acre, and I can't help it. So, I don't believe in these statistics. I wish we had some real way of knowing, and the proof is that no decent corn grower will raise such little, insignificant nubbbins that yield only that much on an average to the acre.

A member: I was just making a remark that people do not ordinarily appreciate the importance of statistics or figures. I saw a statement once how a person could become wealthy raising cabbage. There were 43,260 square feet to the acre; the average cabbage head would just about occupy one foot, and at ten cents per head, with 43,260 heads to the acre, he would make $432.60 on each acre. Now, that is more profitable than raising corn.

Dr. Chamberlain: Mr. Chairman, nobody but a cabbage head would believe that. (Laughter.)

A member: Mr. Chairman, I would like to ask the speaker a question. He did not say anything in regard to whether he would use a jointer in the fall or in the spring. What has he to say about that?

Mr. Judy: I would say in plowing clover sod I never have used a jointer. If I were going to plow a timothy sod I would use that remedy. If you had trouble with your sod in the spring I would suggest that you try a disc harrow.

The President: I want to tell you something about the cabbage head. My little daughter asked me last week what was the difference between the cabbage head and a man's head. I could not answer the conundrum, and in time she told me there was none. (Laughter.)

The President: Now, we are just up to the afternoon program; just up to it. Let us be prompt in all that we do so that we may get through with this most excellent program. We must finish our program this afternoon. Now, another sweet song by the Cecilian Ladies' Quartette.

Music by the Cecilian Ladies' Quartette.

The President: While we are proud of our great state, I would say that we have within our borders a school, a university, of which we are doubly proud. We have a gentleman with us this afternoon from that school. He is secretary of the Ohio Forestry Society, Professor William R. Lazenby. He has not only done much work in the Ohio fields of agriculture, but he has also gone forth bearing glad messages to most of the counties in this state and in other states. I am glad to present him to you this afternoon to speak upon this important topic, "Present Demands and Economic Use of Woods in Ohio." Professor William R. Lazenby. (Applause.)

Professor William R. Lazenby, Secretary of the Ohio Forestry Society, then addressed the institute on "Present Demands and Economic Use of Woods in Ohio."

ADDRESS BY PROF. WM. R. LAZENBY.

Mr. President and Members of the Institute:

It certainly is a matter of great congratulation to you that this annual institute here in Columbus is so well attended, and I am particularly pleased that the representation comes from so wide and varied sections of the state.

There was a little girl who was the only child of a very happy family, and she one day asked, "Papa, where were you born?" He said, "I was born in Boston." Well, she said, "Where was mamma born?" "Why, your mamma was born in San Francisco." "Well, papa, where was I born?" "Why, my daughter, you were born in St. Augustine, Florida." "Well, papa, how in the world did we three people ever get together?"

Well, when I see so many here from various parts of the State, representing so many interests, I wonder how we ever got together; but I am glad we are here. Now, I know that the time is short, and in justice to those who come upon the program after me, I shall omit much that I would like to say. When a man is fond of a subject he always likes to say a good deal. There is one instance when a man likes to say more, and that is the man who does not know much about the subject on which he is to speak.

The principal demands for wood at the present time in Ohio may be classified as follows:

I. For buildings, bridges, trestles, derricks and construction generally.
II. For posts and other fencing material.
III. For steam and electric railroad cross-ties.
IV. For poles for the support of telegraph, telephone, electric light and power wires.
V. For carriages, cars, wagons, boats and transportation vehicles generally.
VI. For cabinet ware, furniture and room fixtures.
VII. For agricultural implements, tools and machinery generally.
VIII. For household utensils, appliances, conveniences, toys, ornaments, etc.
IX. For tanks, casks, barrels, boxes, baskets and packages generally, including coffins.
X. For paper, paper flooring, etc.
XI. For street paving, plank walks and roads.
XII. For mining purposes.
XIII. For chemical industries.
XIV. For fuel and charcoal.

BUILDING AND CONSTRUCTION GENERALLY.

This constitutes one of the largest demands for wood. The "bill stuff" of architects and builders, such as posts, joists, studding, stringers, etc., consists mainly of varieties of wood not found in the state of Ohio, or such as are now practically exhausted. For general frame and structural work, long leaf pine, short-leaf pine, Norway pine, white pine and hemlock are used in about the order named. The first three species are used indiscriminately under the common name of "yellow or southern pine." The first named, being the hardest and strongest, is the most desirable pine in the market. It is what all good builders try to secure. White oak is still used in structural work in very heavy buildings, but less frequently than formerly. Its place is now being taken by the long-leaf yellow pine.

The finishing woods most used are "yellow" pine, white pine, red and white oak, black and white ash, sycamore, birch, chestnut, maple, black cherry, yellow poplar, butternut and black walnut. The two last named have become so scarce as to be almost entirely out of the market as far as building woods are concerned. At the present time, white oak stands easily first, as being the most popular of all finishing woods. The reasons for this are that it best lends itself to artistic treatment and is probably the most durable of the list. As a finishing wood, red oak commands about the same price as white oak, although less durable. Maple is used largely for flooring, ceiling and stairways. In business blocks and wherever floors are subjected to great wear, hard maple is regarded as the ideal wood, as it stands well, wears smoothly and retains a fine polish. The use of birch is on the increase, while yellow poplar is seldom used except in case of painted and enamel finish.

For siding and paneling, there is no wood in such general use at present as the tulip or yellow poplar. This wood seasons without serious injury, is easy to work, holds nails and takes paint well.

Perhaps there is no part of ordinary building material so difficult to secure in good quality as lath. It is generally made from the waste or leavings of sawed timber. Hemlock, owing to its cheapness, is most commonly used, white pine being usually regarded as too expensive. In many of the better grades of building, tulip or yellow poplar is now substituted for hemlock.

For shingles, white pine, cedar and red wood are about the only woods that can be used with satisfaction.

FOR POSTS AND OTHER FENCING MATERIAL.

Nearly all kinds of wood have been used in the construction of fences. As wood becomes scarcer and more expensive, rails, boards and pickets are being dispensed with, but the demand for posts appears to be on the increase. Few fences, except those requiring posts, are now built, and the farmers as a class are doing little in the way of establishing living fences. Post timber, therefore, is likely to be in demand for many years to come. The Ohio woods that are in the greatest demand for posts, are at the present time, black or yellow locust, western catalpa, oak (of the white oak class), red cedar, chestnut, osage orange, black walnut, red mulberry and honey locust. As the supply of these woods is becoming rapidly exhausted, the price advances. Good fence posts are now selling in Ohio for from fifteen to thirty cents apiece.

STEAM AND ELECTRIC RAILROAD CROSS-TIES.

The demand for cross-ties for railroads is almost beyond belief, and is steadily increasing. Probably more cubic feet of Ohio grown wood have been used for this purpose during the past year than for any other single object. The varieties of wood most in demand are white and bur oak, red and white cedar, chestnut, black locust and catalpa. White oak is considered the best, although somewhat less durable than either red cedar or black locust. It can be worked to more uniform size, and holds the spikes better. Chestnut is about as durable as the oak, but does not hold spikes as well. Cedar and cypress, although more durable under ordinary conditions than either oak, chestnut or locust, do not stand pressure so well, and cannot be used economically on short curves unless protected with iron plates.

There is no good reason why the western catalpa should not be grown in Ohio in quantities sufficient to meet nearly all the demands for cross-ties, leaving the oak to be used where it is less easy to substitute other woods, and where the price paid will be in better proportion to its true value.

Counting the average life of a railroad tie at ten years—over one hundred millions are required annually for renewal by the railroads of the United States. At the present time in Ohio—street cars and suburban electric lines are using more wood than the steam railroads.

As the average price of railroad ties is fifty cents, it shows that fifty million dollars is expended annually for railroad cross-ties. All available tie timber is removed from five hundred thousand acres of land—two hundred ties per acre would require five hundred thousand acres annually.

FOR POLES FOR THE SUPPORT OF TELEGRAPH, TELEPHONE, ELECTRIC LIGHT AND POWER WIRES.

The woods most in demand for the above purposes are red cedar, white cedar, larch or tamarack and chestnut. Except the last named they are not found in marketable quantities in Ohio, so they must be brought in from outside, and the transportation must be added to the first cost.

For shorter poles, yellow or black locust and catalpa are now quite generally used and when well grown are considered satisfactory. As there is likely to be a continually increasing demand for these poles, with a steadily diminishing supply, plantations of these varieties could scarcely fail to yield a handsome profit to the owner. The average life of these poles is ten years, a little less than the time that would be required to grow them. Woods that answer all the requirements of a good telegraph pole are few, and will always command good prices. The demand in Ohio should be met at as early a date as possible by home-grown chestnut, catalpa and locust.

CARS, CARRIAGES, WAGONS, BOATS AND TRANSPORTATION VEHICLES GENERALLY.

Although the demand may be less in quantity, there is no group of the wood consuming industries of Ohio that use a greater number of varieties of wood than the one now under consideration.

Take an ordinary passenger car and we find that the sills, plates and floors are made of yellow or southern pine; the posts of the frame of ash, the truck frames and bolsters of oak, the sheathing of yellow poplar, and the roof of white pine and cypress. Of these woods one firm of car manufacturers in the state used during one month the following quantities:

Yellow pine	700,000 feet.
Timber oak (white, red, etc.)	560,000 feet.
White pine	300,000 feet.
Yellow pine	763,000 feet.
White ash	37,000 feet.

In addition to the above there were used during the same month for inside finishing, the following:

Black cherry	14,000 feet.
Cotton wood	13,000 feet.
Mahogany	5,000 feet.
Maple (curled)	3,000 feet.

Besides in smaller quantities, mainly veneers, the following native and tropical varieties: Plain and curled birch, sycamore, chestnut, butternut, curled walnut, rosewood, satinwood, saffron, boxwood, amaranth, olive, cocobola and ebony, making a grand total of over two million five hundred thousand feet of wood in one month that were used. The oak, black cherry, ash, birch and cotton wood were furnished by Ohio, the yellow pine come mainly from the southern states.

It is in the "palace or Pullman" cars that the greatest variety and most expensive sorts of wood are used. These illustrate, as do our great modern hotels, the tendency to luxurious extravagance, especially in the way of costly ornamentation, reaching far beyond the needs or wishes of the ordinary traveler. In wagon and carriage construction, the following are the woods principally used: White oak, hickory, white ash, yellow poplar and yellow pine.

To a less extent—black cherry, birch, beech, black walnut, black locust, elm, black gum, sweet gum and iron wood.

In nearly all of our heavy wagons the hubs, spokes, felloes and all the running gear except the axles and tongues are made of white oak; the axles are made of hickory and the tongue of white ash. In the lighter vehicles, hickory is usually used for the spokes and felloes, and black locust and elm for the hubs. The shafts are generally made of ash. The boxes or beds of carriages and wagons are largely made of yellow poplar, ash and yellow pine. The former is the most largely used. It is strong, not liable to twist or warp, and is capable of taking a fine polish without the use of any previous "filler," for which reason its finish is more permanent. Its clear quality and size permits its use in wide boards which is a special attraction to the manufacturer. Hard yellow pine is used for wagon box bottoms, although yellow poplar is sometimes substituted.

CABINET WARE, FURNITURE AND ROOM FIXTURES.

The demand for good wood to meet the requirements in the line of home and public furnishings is enormous. The aggregate amount and value of the furniture now in use almost defies calculation.

In considering future demands, we should not fail to take into account not alone the natural increase in population, but the constant displacement of old and wornout or broken furniture for new and more artistic designs.

A few years ago the dark woods, especially black walnut and black cherry, were almost universally used, not only for the higher priced, but for much of the cheaper furniture as well. These woods, especially the walnut, worked easily into the most elaborate forms and exquisite carvings, and for many years were immensely popular. But that day has passed and the black walnut no longer finds a place in the furniture trade in Ohio. Search as diligently as you may among the stock of our large furniture stores and warehouses, scarcely a single piece of black walnut can be found. Oak, birch, maple and ash have completely replaced it for all of the better grades of furniture. This passing of the black walnut is not due alone to a growing scarcity and consequent increase in price, for it is still as abundant and quite as cheap as some of the woods that have largely taken its place.

Public taste has changed, and the lighter colored woods are now in vogue. The dull, somber color of the walnut and cherry are no longer attractive and have given way for the lighter colored maple, birch and oak.

Oak is now in great demand, and it is probable that the quarter-sawed oak work of the cabinet makers of this country is not surpassed in beauty and simplicity of design, and perfection of finish, elsewhere in the world. Just how long this wood will be the prevailing style no one can tell. For paneling and for cylinder desks, etc., where lightness, flexibility and toughness are required, the yellow poplar is in great demand.

For the more common furniture, elm, ash, chestnut, beech, yellow poplar, basswood and other native woods are largely used. Yellow poplar and basswood are mainly used for inside work. The cheaper grades of furniture are made almost exclusively of elm, although chestnut is much used for dining room and chamber sets.

The rage for old furniture not only occasions a demand at extravagant prices for genuine articles of undoubted antiquity, but has led to a revival of some of the old styles and to numerous successful imitations.

Cabinet making is carried on to a greater or less extent in every important city in Ohio. It furnishes thousands of men employment and consumes millions of feet of lumber every year.

The use of wood in the form of thin strips or veneers is not a modern art. Although the object is to deceive, that is, to represent as solid what is only surface, the practice has certain intrinsic advantages and can scarcely be condemned. It enables many to secure what they desire in wood finishings, panels, casings, furniture and other wood work, where the price of the solid material is prohibitory. Again, the use of veneers has the merit of strengthening the wood basis preventing it from warping and cracking, and admits of single designs or effects by exact duplication that would be practically impossible in the solid wood.

The principal Ohio woods used for veneering are maple, sycamore, butternut, black walnut, birch, black gum, ash and sweet gum. From the above woods sections are selected, which contain knots, burls, gnarls, curls, etc., which, when sawn or cut into thin strips, present surfaces showing beautiful figures. Other sections of the same woods exhibit a wavy, mottled or dotted appearance. These excrescenses, and variations in structure turned into veneers, furnish an almost endless variety of pleasing figures, so that what is deformity in nature becomes a thing of beauty in art.

Veneers vary in thickness according to the material, or value of particular woods for the purpose. From ten to one hundred veneers are cut from a single inch thickness of solid material. The perfect machinery now in use enables the manufacturers to supply the cabinet maker or builder with uniform veneers of the required thickness for different classes of work.

One form of veneering now in vogue is what is known as "pressed work." This consists in gluing together several veneers of a cheaper wood, say cherry, walnut or ash, and facing them with the more expensive rosewood, mahogany, etc., the whole is then steamed and shaped in proper moulds to furnish the backs and arms of chairs or other curved work. In this way greater strength, with less liability to crack or warp, is secured than could be obtained from a solid piece. Large thin sheets of veneering are sometimes used in the place of paper hangings, giving a room the appearance of having been finished in the solid wood from which the veneers are cut. Veneers are occasionally used for binding books. In fact the application of the art is almost unlimited.

AGRICULTURAL IMPLEMENTS, TOOLS AND MACHINERY GENERALLY.

The woods that are mainly in demand for agricultural implements are oak, ash, hickory, elm, maple and yellow pine. The growing scarcity of these tough strong woods has led to the larger use of steel and iron. For the same output of implements of certain kinds as drills, harrows, cultivators and the like, the amount of wood used in their construction is from thirty to fifty per cent. less than it was five years ago.

Durability united with lightness, strength and elasticity is found in the ash. No other wood can properly replace it for tongues to the larger agricultural implements and for the handles of forks, spades, shovels, hoes, rakes, etc.

Hickory is heavy, strong and elastic, and for the handles of axes, picks, sledges, hammers, etc., cannot be equalled.

White oak, ash and hickory are in large and constant demand by the manufacturers of tools and implements. These supremely useful trees are rapidly disappearing in Ohio, and on the grounds of utility alone their conservation and culture should be the care and concern of every public spirited citizen.

TANKS, CASKS, BARRELS, BOXES, BASKETS AND PACKAGES GENERALLY, INCLUDING COFFINS.

In the above division almost every form of native Ohio wood is used to a greater or less extent. For large tanks, cypress is in demand; for casks and barrels for liquids and meats, white oak seems indispensible; for all rough cooperage like barrels for storing and shipping salt, sugar, apples, vegetables, lime, cement, etc., elm is the wood almost invariably used; while for a little finer grade of barrels, ash is employed. Elm is likewise the principal wood used in the manufacture of baskets and fruit packages of all descriptions. In addition to elm, but in much less quantity, cottonwood, basswood, sycamore and beech are used for fruit and market baskets. For ordinary packing boxes and crates, all the softer woods are used. Pine in different varieties probably takes the lead, but hemlock, ash, basswood, chestnut, cottonwood, elm, sweet gum, sycamore and yellow poplar are in demand.

Coffins are now made largely of chestnut and yellow poplar. These woods are easy to work, take a fine polish and stain well. They are finished so as to closely resemble walnut, black cherry and mahogany. One prominent coffin and casket company used last year:

Chestnut	500,000 feet.
Yellow poplar	250,000 feet.
Quarter-sawed oak	100,000 feet.
Red cedar	20,000 feet.

Less than 10,000 feet of all other kinds of wood.

Wood pulp for the manufacture of paper is made from the following Ohio grown woods: Yellow poplar, cottonwood, basswood, soft maple, buckeye and willow. The first two probably furnish over seventy-five per cent. of the pulp wood of Ohio. One pulp and paper company use the above named woods in the following proportions:

Yellow poplar	40 per cent.
Cottonwood	40 per cent.
Basswood	10 per cent.
Soft maple	5 per cent.
Willow	5 per cent.

Very little wood is now used in Ohio for street paving, the cedar block being replaced by cheaper and more durable material. The plank road is also a thing of the past.

Hemlock and some of the cheaper forms of oak are still quite largely used for sidewalks, but even this demand for wood is growing less year by year. Gravel, crushed stone, coal ashes, slag, asphalt, artificial and natural stone slabs are more economically employed and have now taken the place of wood.

The extensive mines in Ohio consume vast quantities of wood of various kinds. Oak, ash, hickory and other tough, strong woods are in demand for supporting roofs and stopes, and for the construction of the various wooden machinery and appliances incident to mining. Hundreds of acres are annually stripped of all valuable timber trees for this purpose alone.

CHEMICAL INDUSTRIES.

Among the "chemical industries" one of great and growing interest to the owner and growers of timber trees is the manufacture of wood alcohol, acetate of lime, wood tar, gas, etc. These products are all derived from wood. The varieties most used are hard maple, black or yellow birch and beech, valued in the order named. White birch, soft maple and other woods are sometimes used, but they are much inferior for the purpose.

The wood is usually brought to the place of manufacture in the form of cord wood, that is, in sections of convenient size for handling, from four to four and one-half feet in length. The wood is placed in iron retorts and subjected to high heat. The volatile portions distill over, are then washed with water, and such as will condense are run off in liquid form. The non-condensable gas is taken under the furnace and is used as fuel. The liquid portion is treated in various ways to separate the alcohol from the wood tar. This is done mainly by distillation. The acid solution is neutralized with lime and then concentrated in large pans until the crude calcium acetates separates out. This crude salt is baked upon an iron stage until it is thoroughly dry. It is then pressed through screens, packed in barrels, and is ready for market. The methyl alcohol is stored in cast iron drums. It is a yellowish colored liquid, with a specific gravity of eighty-two. The odor and taste are not unlike that of crude carbolic acid.

Wood alcohol is largely used to "cut" or dissolve gums in making varnish. It is also burned in lamps and used in other ways. The crude acetate of lime is a greyish brown substance without crystaline form. It has a peculiar, though not disagreeable odor. Commercially it is used as the source of acetic acid. It is also used in calico printing.

As nearly as could be learned, a cord of wood yields from seven to ten gallons of alcohol, and about two hundred pounds of acetate. The gas and tar being consumed as fuel, are not measured. In addition to the above, each cord of wood produces about fifty bushels of charcoal.

Although a beginning has been made, the above industries are not yet permanently established in Ohio. It is probable that the requisite woods will not be found in sufficient and accessible quantities for profitable manufacture.

FUEL AND CHARCOAL.

Inasmuch as nearly all the woods of Ohio are used to a greater or less extent for fuel, either directly or in the form of charcoal, it is unnecessary to specify them. The abundance and cheapness of coal and natural gas have largely taken the place of fire wood, except in the form of a waste product. Wood is still largely used for the manufacture of charcoal and lime. The main use of charcoal is in the manufacture of "charcoal iron." Twenty-five or thirty years ago there were scores of charcoal furnaces in southern Ohio with an annual output of over eighty thousand tons (of two thousand two hundred and twenty-eight pounds) of iron. The enormous demands made upon the forests by these furnaces and the rapid disappearance of the timber in the vicinity of the iron mines so increased the expense of charcoal, that the industry soon began to wane, although the supply of ore was not perceptibly diminished. At the present time Ohio is not producing one-quarter of the charcoal iron that it did twenty-five years ago.

The amount of wood necessary to sustain a charcoal furnace may be appreciated when it is known that from twelve thousand to fifteen thousand cords of wood or the yield of from three hundred to three hundred and fifty acres are required each year for a single furnace.

The varieties of wood most common in the "charcoal iron" region of the state are oak, hickory, maple, beech, ash, yellow poplar, black walnut and a small percentage of pine.

As originally exploited, the timber land along and for some distance from the shores of the Ohio river, yielded on the average about forty cords of wood to the acre. Farther from the river, and on some of the higher ground, the yield was somewhat less. Upon recutting the same land after an interval of twenty-five years, the yield was about twenty cords to the acre. It has been estimated that the annual increase each year thereafter was at the rate of about one cord to an acre. This being the case it follows that at the end of forty-five years the second cutting would equal the original, or forty cords to the acre. It is also claimed that the third crop, with intervals of twenty years, is much more rapid in its growth than the second. This is explained by the fact that the second crop comes largely from the seed, while the third crop is to a greater extent true "second growth," coming from the stump.

The original woods used in "charcoal iron" production have had a standard value in the past of one-half dollar per cord in the tree.

WOOD FOR SPECIFIC PURPOSES.

Some demands for wood for minor, but specific purposes, may be enumerated as follows:

For shoe pegs, hard maple and birch.
For clothes pins, sweet gum and ash.
For skewers, wahoo and dogwood.
For wooden shoes, black gum and birch.
For artificial limbs, buckeye.
For walking canes, osage orange and hickory.
For policeman's clubs, black or yellow locust.
For lead pencils, red cedar.
For tooth picks, yellow poplar, beech and ash.
For matches, well selected pine.
For tent poles, tamarack.
For levers and handspikes, ironwood and blue beech.
For excelsior, different varieties of pine.
For oars and paddles, white ash.
For hoops and bent work generally, ash and hickory.
For saddlery and harness work, elm, ash and hickory.
For patterns and scroll work, white pine and yellow poplar.
For musical instruments, basswood.
For cheap cigar and tobacco boxes, sycamore.
For violin cases and piano actions, spruce and maple.

For cracker and cake boxes, cottonwood.
For water pipes and pump logs, pine and yellow poplar.
For gunstocks and carpenter tools, maple, beech, birch and black walnut.
For wooden bowls, alder and birch.
For shoe lasts and hat blocks, birch, maple, gum and persimmon.
For clothes chests, cedar and sassafras.
For tree nails and timber pins, black locust, hickory and oak.
For wagon hubs, black gum or peppridge.
For bee hives, honey frames and boxes, one Ohio firm uses annually:

White pine	1,500,000 feet.
Basswood	1,000,000 feet.
Yellow poplar	500,000 feet.

I merely want to say in conclusion that I hope those of you who have timber land will try to conserve it, not save every tree, cut out the bad ones, but try to conserve it and try to expand it, because upon our timber after all depends, not only these supplies of wood, but depends very largely the success that we would have with other growths. Our climate is being affected, we know. I won't say that the rainfall is lessening because of the cutting off of our timber; possibly we have about as much rainfall now as we ever had, but we know that when the rain falls instead of remaining in great forest reserves, it runs off. And then we have found at one season of the year a little low water and dry springs, and I can tell you, gentlemen, that that can be attributed to the denudation of our hillsides more than anything else. I thank you. (Applause.)

The President: Now, we can give but five minutes for questions on this very excellent paper. Have you any questions? I have admonished you so many times to be prompt, that I do not like to do it again, but the success of our meeting depends upon getting through with our excellent program, so proceed, gentlemen, as quickly as possible with any question you may have.

A member; A few days since I was in one of the hill counties of this state, and I noticed adjoining the road side the locust trees growing in the fields, and I said to the man who was working there, "Timber seems to be doing well here." He replied that it was. And I asked him if it grew well there. He said, "Yes, on some fields that are well cultivated, but after we stop cultivating them, the locust and the black walnut will come in." Now, I wondered if that did not have something to do with the clover plant. Professor Lazenby speaks of growing a great variety of timber. I wondered if on these hillsides we could not plant the locust, and then afterwards plant the other trees.

Professor Lazenby: I will say that no observation has been made, or examination of the locust root, but we know that it is similar to clover, and we do know that it grows on thin soil.

Mr. Holt: I appreciate the good speech and the good points the professor has given us about the woods, but he has left an impression about different kinds of posts, that they will last about ten years. That is correct about some of them, but not all. Now, my farm is down among the hills where there are woods, and I have been using the different kinds of woods, and the black oak will only last five or six years. I know what I am talking about, for I have tried it and speak from experience. White oak will last about ten years in the ground. That is what the professor said. Now, take the locust posts, and I will tell you that I have locust posts on my farm that were put into the ground fifty years ago, and they are still good. One of my neighbors says that the locust post will last a lifetime, because his grandfather tried it twice.

Professor Lazenby: I think I said the life of the pole was about ten years, not the post. The life of the pole that has to support something, and is much taller than the post, is from ten to twelve years. I think you misunderstood me.

Mr. Holt: I guess I understood you to say the post would only last that long.

Professor Lazenby: I said telegraph pole.

The President: If you will notice the subject of the next topic, "The Education of Our Girls," you will know that we have something interesting in store for us. A young brother of ours once said that he always liked to be alone, especially when he had a pretty girl with him. Someone has said about the girls, "Oh, the girls, the girls with their yellow curls and bright red cheeks." But we don't see the flowing curls much more, gentlemen. There is a little knot on top, and the hair is drawn up there, and you must not condemn this practice of our pretty girls, because I see many of our good middle aged farmers have adopted the same fashion, with the hair "knot" on top. (Great laughter.)

We have with us this afternoon a genteel lady whose words and the influence of them has gone well round our country. And I am happy and glad to introduce to you this afternoon Mrs. Mary E. Lee, of New Plymouth, Ohio, who will address you on the subject, "The Education of Our Girls." (Applause.)

Mrs. Mary E. Lee, of New Plymouth, Ohio, then delivered the following address on "The Education of Our Girls:"

ADDRESS BY MRS. MARY E. LEE.

The invitation to meet with you this week and to talk with you upon a subject that lies near the heart of each, was so welcome that I hastened to answer the call. While the discussions have related chiefly to farm topics, I have enjoyed every one of them as much as if they pertained directly to household matters. Yet, I feel that while the eager minds were leaping to meet the new thoughts that were unfolding, there was a shade of sadness that the wives and daughters could not also have their sessions and discuss problems that perplex them. I believe you thought that there was as great a field in woman's work on the farm as man's, and longed for her to enter in.

The aim of education is to fit one for life, to train the brain in reason and imagination, that it may grasp the meaning of the world about it and perceive its utility and beauty. It is a matter of sincere congratulation that the experience of time has developed this conception. Through ages the ideals of the kind of an education necessary and the people who were fit to be educated have been changing. Why, it is not so very far back that it was thought absurd for a woman to receive any but the most meager instruction. The pendulum of public opinion swung now far back, now forward, but serene in the apparent chaos "one increasing purpose ran" that not one-half of the human family should remain in the slavery of ignorance, while the other half advanced; that not one or two organs or functions only be trained, but all with which we are endowed be given that development which would best fit one for taking hold of the forces of nature and converting them to the use of man. For a time it seemed that the rebound from an education that was largely ornamental to one that was intensely practical, would rob the individual of much of the sweetness and beauty of life. But that great soul that exists at the center of the universe, of which all are a part, was still oracular. It told men and women that that education which took note only of the physical in its relation to productive enterprise, was as absurdly illogical as that which ignored the practical duties of men and women. It told them that beauty, worth and virtue existed all about them and in the hearts of mankind; that to see beauty was to perceive goodness; to perceive goodness was to love it. Hence it is that we insist that with special training as broad and generous a culture be imparted as circumstances will admit. This is especially necessary in the education of our girls. Because of the close companionship that must exist between mother and children in the formative period of a child's life, it is highly essential that her ideals be lofty, pure, true; that her knowledge be accurate, her power of reasoning developed. This training must come through books, people, travel, nature, solitude. I wish that time permitted an elaboration of this matter. The more I mingle with people, the closer I get to their hearts, the better I understand their cravings and their disappointments, their hours of sorrow and high joy, the more am I impressed with the deep need of that early training that will discover to each the hidden recesses of his soul, that will show him the power and beauty that resides within himself. Yet while I realize that we miss much that might be ours, I want to turn attention today to the discussion of woman's relation to the identical forces with which you are dealing in your farm work, and how her knowledge vitally affects the state, since the nature of its citizens is more largely modified by early influences than anything else.

There has been much said in our meetings in regard to light, heat, moisture, ventilation, carbohydrates, fats, proteids and their relation to the best and most economical care of animals, but not a word as to their relation to man. Yet we realize that more than half the sickness and diseases, the loss of sight and hearing, the various ills which we suffer are due to ignorance of these very matters and their application to the human family. While we do not contend that these nuisances could be entirely abated, we do submit that the right kind of knowledge would bring much relief. I firmly believe that the right sort of living, plain, wholesome, palatable food, in proper amounts, sanitary conditions with proper observance of the needs of ventilation, would give vigorous, healthy, strong bodies, clear minds capable of performing far greater tasks than we have felt possible. All the energy that is generated in the body, the powers to do work, to think, feel, the rebuilding of wornout tissues must be derived from the nutrients in foods; every breath, every act, thought, feeling consumes tissue, even the digesting of food requires about five per cent. of energy generated to render it available. Constantly the bones and tissues are burned out to furnish energy to the body and brain; and they must be replenished or the part dies. It is not necessary alone to know that tissue can be manufactured and repaired by proteids, mineral matters and water alone, but one must know what kind of food to use in individual cases, and the purpose to which it is to be devoted. Analysis may show that certain foods contain the right per cents of nutrients, but if they are not readily convertible into energy under the circumstances, their value is decreased. For example, one is laboring under severe mental or physical strain. He must have strength and endurance to complete the work. He must get it from food. It is of vital importance that it be readily convertible into energy with as little tax on the digestive organs as possible. He does not want to carry any extra ballast. What he wants is sustenance that will carry him through the strain, keep him in good condition. Now, our vegetarian faddists to the contrary, the foods that will yield the greatest amount of energy with the least tax on the digestive apparatus and give it up at once, are found in meats, milk and eggs. But another point rises—the condition of the food as it enters the body. The wise cook will not supply roast beef at this critical juncture because it takes from three to five hours to be converted into energy, but will furnish it in lightly cooked steak that requires but two hours for digestion. Moreover, she must know the kind and amount of nutrients required to replenish the burned out bone and tissue. The duty of supplying the food in sufficient quantity, quality and kind, and its method of preparation, lies almost entirely in the hands of women. Really, it is the intelligence with which she supplies the family food that conditions the enterprise of those to whom she ministers. The comparison of the body to an engine is trite but pertinent, and the one who feeds the bodily engine must know what and how to feed it. She does not want to bank the fires with indigestible foods, or those requiring long time for digestion when immediate speed is required, nor does she want to furnish stimulating or quickly absorbed foods when a period of quiet and languor should ensue. In some of our penal institutions when it is necessary to inflict severe punishment, the convicts are fed on stimulating foods and kept in solitary confinement, there to chafe like a lion in its den. Men cannot stand many days of such confinement till the mind gives way. Many a child is punished for exuberance of spirit at inopportune times, or taunted with sluggishness, when it is a matter of food absorption, and not moral obliquity that causes the lapse.

We hear much said of the modern demands upon woman. There are no greater demands than those of the home. The health, happiness, productive energy of herself and family depend upon her grasp of the essentials of home life. Loose, general intelligence will not suffice. There must be specific knowledge and trained reasoning powers that she may adapt herself to the conditions that change momentarily. The kind of work men do is influenced by their food. It is said of the great actor Keene that when he would impersonate a tyrant he ate pork; a robber, beef; a lover, mutton. I would not go to such extremes, but in these days of fads in foods it is of the highest importance that the women have data upon which to base their calculations. For instance, the vegetarians urge their claims arguing that the vegetable foods possess such large per cents of proteids that they can supplant the proteids of meats, eggs, milk. The analysis may seem plausible, but the skilled woman knows that while the normal stomach can digest all but about three per cent. of beef, the undigested residue in vegetables is far greater, amounting in the case of potatoes and rice to about eight per cent., and in carrots forty per cent. Of what value is protein if not available? Not only the analysis must be taken into account, but the ease and completeness of absorption and its waste after entering the body.

It is a lamentable fact that the per cent of strong, healthy women is relatively small. No intelligent person believes the old time doctrine that a curse is laid upon woman that causes her to suffer. The only curse from which she suffers is ignorance of nature's laws. The normal condition is health. Sickness is simply a danger signal that one is breaking nature's laws. We insist upon healthy ancestry in plant and animal life, knowing that like produces like. Is it not of basic importance to the race that the mothers be strong and healthy? Must she not be able to perpetuate a race of clear brained, strong limbed, well proportioned men and women? How can she avoid nature's laws?

To none has science been a greater benefactor than to woman. Its revelations have opened to her almost limitless opportunities to exercise her mental qualities and to use her knowledge for the betterment of humanity. Some of the revelations have been applied, but there is a field so vast and inviting as to stagger one. We tremble on the eve of yet greater applied knowledge, and fortunate indeed is the young woman who has been trained to patient reasoning observation.

As I listened to the splendid address of Professor Hopkins and later to the intelligent, pertinent questions put by our farmers, my heart thrilled with pride. And then followed the mournful thought that we women had not had the opportunities to study the problems that so vitally affect the race. Ten years ago, brother farmers, you could not have asked the questions you did nor followed the reasoning. You did not have the information upon which to base intelligent inquiry. Make it possible for women to acquire data upon matters that pertain to their work and they will ask as many questions.

It seems cruel to say that thousands of lives are annually lost through the ignorance of those who would gladly give their own to save another. And other thousands go through life with feeble constitutions simply because of ignorance. It is not a dispensation of Providence, but a dispensing with the commonest preparation that you demand of others in other business. No one would dream of entering any avenue of business without preparation, yet the business of home making, the foundation of all work, is begun with only mother wit, prejudice, fancy, impulse to direct.

Be fair with the girl. Give her the same chance you give the boy in fitting for the duties of life. Every normal girl desires opportunity to use the brain that is throbbing and pulsing with eager desire for knowledge. When she sees that the home offers as great opportunity for the very best brains the country has, then will she gladly turn to it her energies. A universal instinct is always right. Woman's instinct is to love home. But the demands made upon her as home maker must excite her profund respect, develop her self-reliance and satisfy her reason. You can not expect a bright ambitious girl to see much opportunity in a profession where instinct and providence supplant knowledge.

I would that every girl knew something of psychology. The laws that govern the mind are related to those of the body. It would be amusing were it not fraught with such dire heartache to see the ideals set up, to hear the arbitrary rulings upon what is right and wrong in human conduct. There is nothing that is absolutely right or absolutely wrong. There are modifying elements. Yet prejudice, ignorance lays down rules and woe betide the independent lad or lass whose instinct leads him to violate a single canon of this unreasoning prejudice. Only a genius can rise above the petty tyrannizing influences and say, "I am. I have a right to the integrity of my own being."

Teach the girls to reason. Of what value are observations and impressions if they can not reason as to their relation to human life? Any education that ignores this principle is no education.

Give the girl the most liberal preparation possible for the work that engages fully seventy-five per cent. of the women. And believe me when they see the deep relationship that their work bears to state and nation building, they will the more readily forsake the callings that are really better adapted to a man's strength, for the one that will call into use the highest talent.

The President: This paper is so complete that we all agree it calls for no discussion. If anyone has a brief word of comment, favorable comment, we will be glad to hear it.

Mrs. Bennett: It seems to me that it is not necessary to commend the paper. It speaks for itself. It is good throughout and speaks the truth. We all can derive much profit and benefit from it.

Dr. Chamberlain: Mr. Chairman, my own observation is that a far larger per cent. of our girls are educated in just that way than we should be led to infer from the paper read by Mrs. Lee. I believe we are doing largely just exactly what she recommends. Our high schools, the graduating classes in our high schools, at least in the smaller colleges and cities are at least three-fourths made up of the girls, and the girls today are pursuing the useful, the bread and butter, the beneficial sciences, as the boys are. And I believe that if there were as many women today like my own wife and my own daughter, they would discuss Professor Hopkins' paper, or any paper on the sciences of the home, or any subject of home life, with as great intelligence, and even with greater intelligence, than we, the husbands, and the sons, did yesterday. I know they can do this.

The President: Now, friends, we must close this discussion, and turn to the next.

A little more than half a dozen years ago there came to our county a young man, and the message which he brought to us is still with us gathering fruit each year. That same young man went with us—in fact, he went all around our great state, bearing glad, good, valuable messages to the farmer people. Those in authority saw the excellence of his work, and they took him from his own happy home, and from his beautiful farm in Trumbull county, and gave him a place at our station at Wooster. That young man is Professor C. G. Williams, connected with the Ohio Agricultural Experiment Station at Wooster. He is here this afternoon, and he will speak to you upon the subject: "Some Studies from the Experiment Station Corn Fields."

ADDRESS BY PROF. C. G. WILLIAMS.

The agricultural department of the Ohio Experiment Station has been conducting some studies in the corn fields the past two seasons, endeavoring to determine somewhat as to the tendencies of an ear of corn to reproduce itself, and as well what sort of ears and corn plants it is desirable to have reproduced—the latter from the standpoint of yield in bushels per acre.

With this end in view forty-six ears or corn were selected last spring from a variety which has proven well adapted to our locality—the Clarage—representing quite a diversity of types. Twenty-seven of these ears would have been admitted to membership, I suspect, in any orthodox corn growers' association, the locality where they were grown being considered. The others were of varying degrees of heterodoxy, many of which would have been cast into outer darkness by any and every corn grower.

These ears were, of course, all planted an ear to a row at one end of a field of Clarage, and twenty-five so-called "choice" ears were planted in a block of fifty rows of fifty hills each, two rows from each ear, in different positions in the block. Some distance away from this block and under conditions as nearly identical as could be made, the other twenty-one ears were planted. Most of the latter were selected in the spring and some few did not germinate well, thus preventing, in some instances, a comparison of yields. This, however, will not interfere with a study of their reproductive tendencies.

I wish in the first place to call your attention to some types of ears out of the normal, and in most instances very undesirable, and show you the tendency for these characteristics to appear in the crop grown from such seed.

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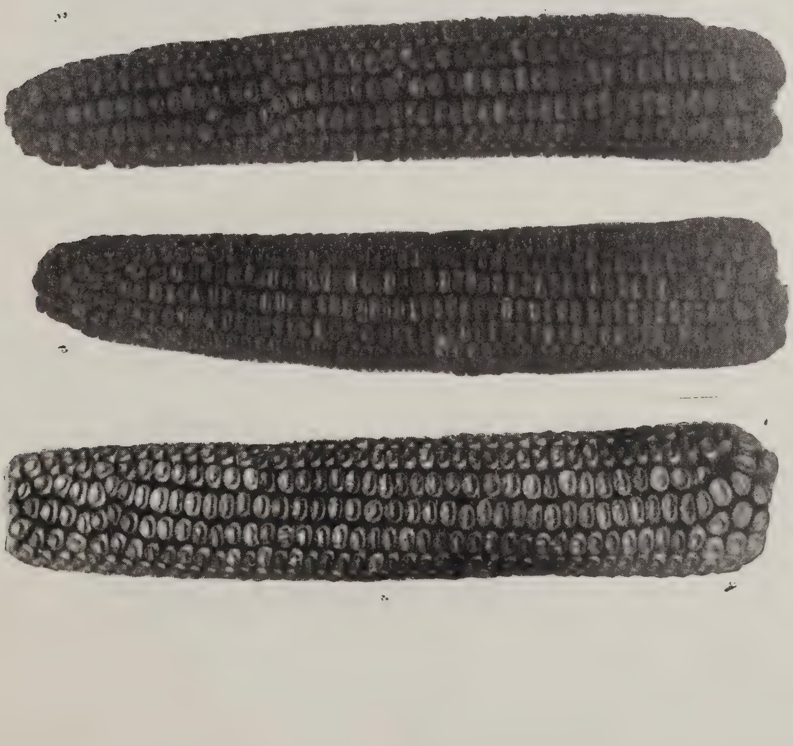

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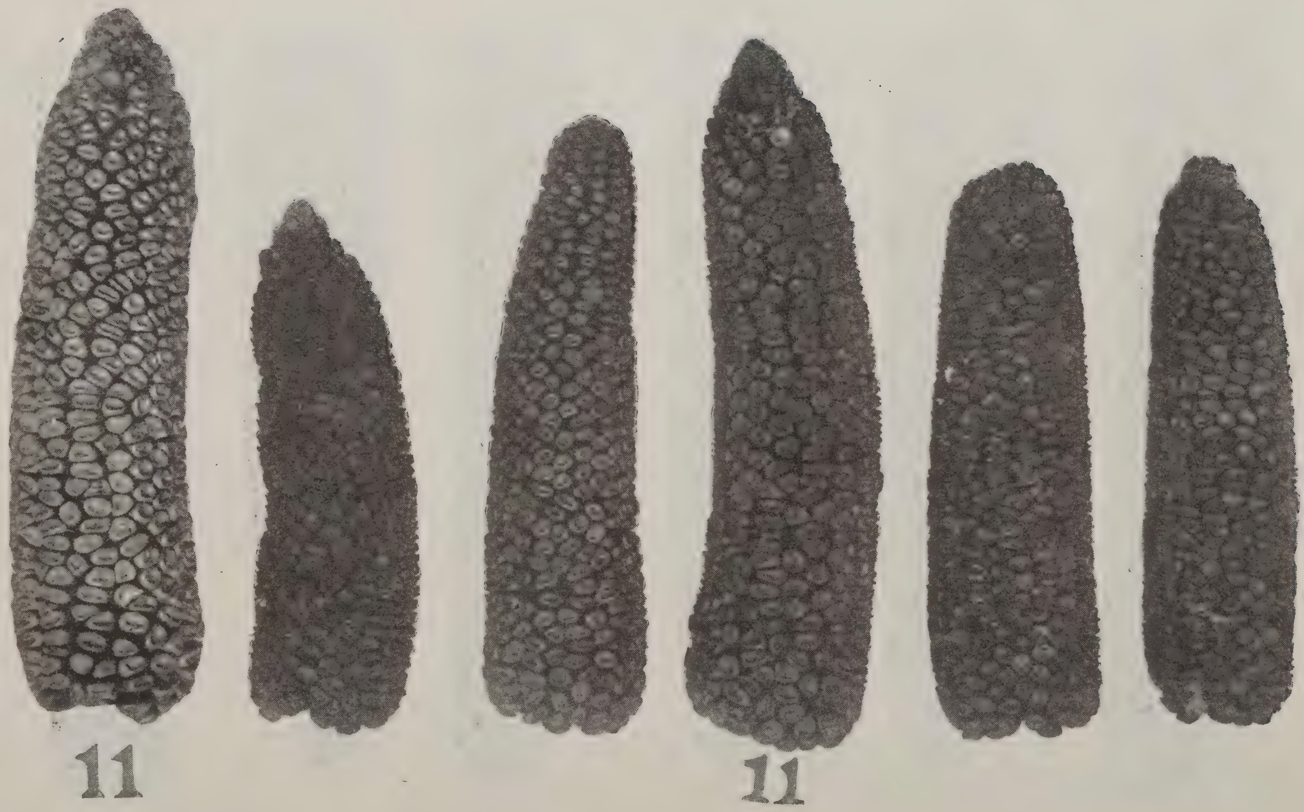
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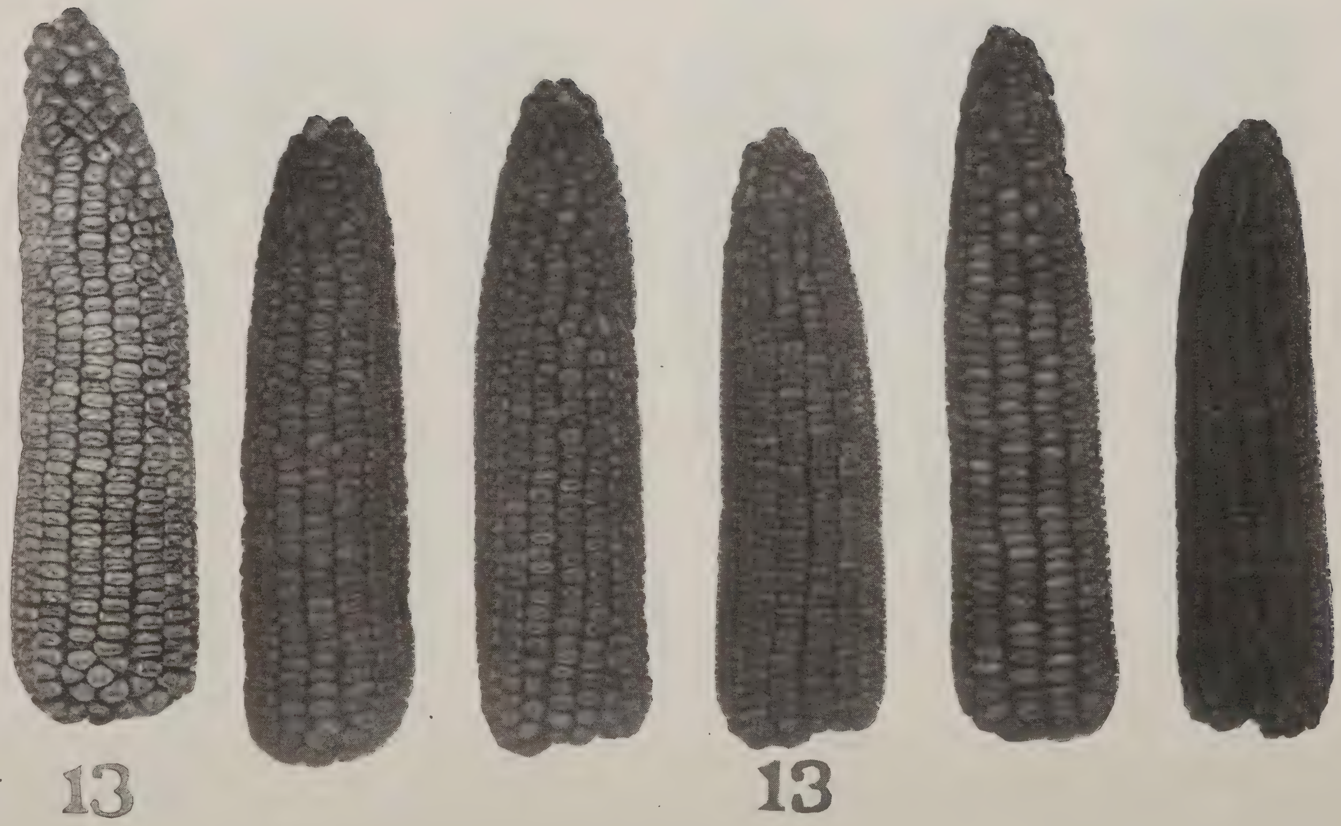
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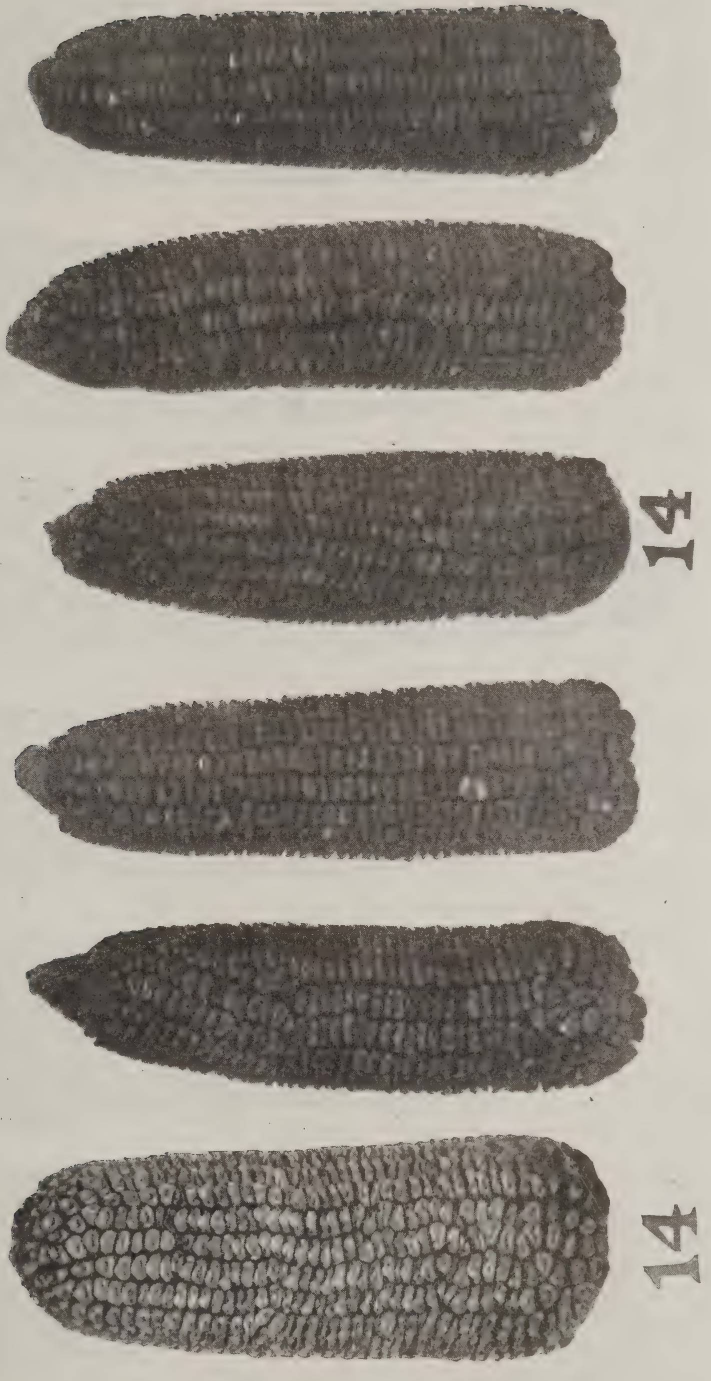
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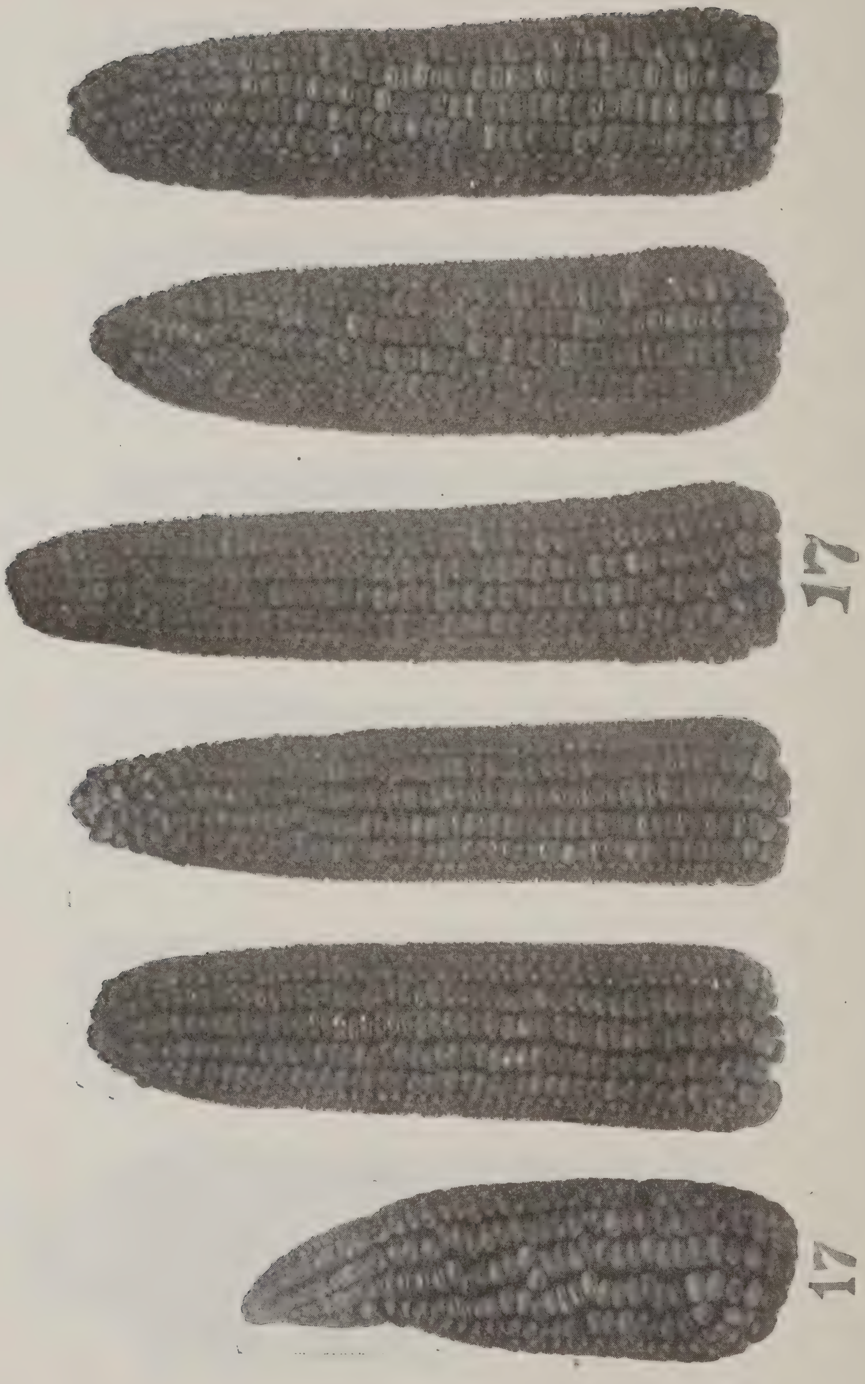
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First, as to length of ear—The normal length of ear for such Clarage as we can count upon to mature in our latitude, is about eight to eight and one-quarter inches. The average length of the seed ears used in the orthodox plot was eight inches. In order to note the tendency of (possibly) a freak ear to increase the length, a selected ear of Clarage was planted which measured nine and one-half inches in length—a slim ear measuring only five and five-eighths inches in circumference. (See No. 3 in seed ears planted and also same number in representative ears from the crop grown from seed ear.) A glance only at the small piles of corn as husked this fall from these short rows was needed to tell which pile was grown from the long slim ear. One-sixth of the ears grown from the long ear measured nine and one-half inches, or more, in length, a number making ten inches. The average length of all the ears grown from this long ear was eight and one-half inches.

To compare with the long ear, and only two rods away, was planted an ear measuring six and seven-eighths inches in length and eight inches in circumference. Photo No. 14 gives a fair idea of the type of corn grown from this seed ear. The average length of all the ears grown from it was seven inches.

Both of these ears likely abnormal; nature attempting to pull them both back into line, yet each of them changing the average length of their progeny fully three-fourths of an inch from the normal.

Before I leave those two ears let me call attention to the average circumference of the two lots of corn grown from them. A measure of all the ears grown from No. 3 shows an average circumference of six inches; the average circumference of all the ears grown from No. 14 is six and nine-tenths inches, very nearly an inch difference.

I want to call your attention to No. 14 for another purpose. You will note that this seed ear is very roughly dented—chaffy. It is not characteristic of Clarage corn as we grow it, and yet this abnormal characteristic appears, not only in the five ears shown in the photograph, but in the larger part of the ears grown from it.

Second, as to shape of ear—Two ears were planted which tapered sharply to a point. No. 13 shows one of the ears with five typical ears grown from it. I would not want to give the impression that all or a half of the ears grown from No. 13 were like those shown; this would be contrary to accepted laws of breeding, but a large per cent of them were. There was such a striking resemblance, the sharp taper, the large flinty kernel at the tip, that one would pick out the children without a moment's hesitation when shown the photograph of the mother plant.

Third, furrows between the rows—No. 12, the original seed ear, was as marked a case of this kind as I have ever seen. Kernels wide apart at the crown, fully one-fourth of an inch, yet the rows were close together half way from crown to tip. No. 6 did not have quite as wide space at the crown, but the cob was visible between some of its rows. I think any one will agree that the crop is characteristic of the parent.

I may say that these seed ears shelled only seventy-seven per cent. of grain. I expect that the ears grown from them will show much below the normal per cent of grain. This has not been determined yet.

The arrangement of kernels—In No. 11 we have an ear of Clarage upon which the kernels are not arranged in rows. Nearly one-fourth of the ears grown from this seed ear were like these shown. I failed to discover any similar ears from the other rows.

In this connection I wish to call your attention to the effect of selection of seed for the number of rows (Chart 1). Here we have three seed ears, each of which had eighteen rows of kernels, and compared with them three ears which had twelve rows each. Taking the average of the product of the eighteen-rowed ears, we find one-third ten-rowed ears, eight twelve-rowed, thirty fourteen-rowed, forty-four sixteen-rowed, nineteen eighteen-rowed and six twenty-rowed. The average of the product of the twelve-rowed ears is: eight ten-rowed, fifty-seven twelve-rowed, forty-five fourteen-rowed, ten sixteen-rowed, two thirds eighteen-rowed, no twenty-rowed.

CHART 1.

Selection of Seed for Number of Rows.

Seed ear used.	Product: Number of ears having					
Number of rows.	10 rows.	12 rows.	14 rows.	16 rows.	18 rows.	20 rows.
18	..	7	27	55	22	7
18	..	7	21	46	20	5
18	1	10	43	31	14	5
Average.	⅓	8	30	44	19	6
12	10	62	54	9	..	..
12	10	55	41	13	1	..
12	4	54	40	8	1	..
Average.	8	57	45	10	⅔	..

I think that you will agree with me that the arrangement of the kernels of the ear of corn, whether in rows or not, and if in rows, how many, lies largely in the hands of the corn breeder.

I have been considering thus far certain types of ears, certain characteristics which I think are readily and surely transmissible from mother plant to offspring; more surely transmissible possibly than some of us have thought.* I now want to call your attention to one of them, No. 17, which is certainly out of the ordinary and which, it seems, has not been able to fix upon its offspring either its size or its bare tip. The group of ears shown over this number is above the average in size of those grown from it, but there were a number of others just as good. As a matter of fact, in the block of twenty-two rows in which No. 17 grew, there was no ear which produced quite as good corn, and certainly none that produced on the whole any better filled tips. In this heterodox block there were three check rows planted to so-called "good" ears. One of these yielded one and one-fourth bushels per acre more than No. 17, the others less; the nearest one over three bushels less. I may say that in the better block of fifty rows there were none that produced larger or better filled ears. Of seventy-two rows in this special ear work only one produced less nubbins and only two as few—and yet I have been trying to illustrate the certainty with which "like produces like."

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*Desiring to test the tendency of incomplete ears (nubbins) to reproduce themselves, four ears of this character were planted. (up.)

The law of heredity is not entirely set aside even in this case. While No. 17 does not look very prepossessing, its mother the year previous gave the largest yield of any ear in the breeding plot of 1903. That is one reason I selected it—to compare an unpromising child of a valuable mother with children more prepossessing but of unknown parentage.

No. 17 seems to have handed down the superior yielding qualities of its parent.

I should also state that other ears from the same mother plant were planted in the choice block. Some did better than No. 17, others poorer; they averaged two and one-third bushels poorer.

Short, bare and slightly twisted at the tip, in circumference it was the equal of a full sized ear, and I think I am right in saying it was none the less a good seed ear by reason of its failure to attain normal length and a normally filled tip.

I should not want to be quoted as saying that any nubbin is as good (or better) than a full sized ear. There are nubbins and nubbins. I should rate nubbins as belonging to two general classes: Accidental nubbins and nubbins "with malice aforethought." The latter due to weakness, a lack of vitality rather than to accident. We find barren stalks and those we might call semi-barren. The latter produce a sickly nubbin. The accidental nubbin planned to be a good ear, but possibly when the tip silks were ready for the pollen there was none to be had and it stopped short. What belated it? Why did it not come on with the rest of the corn plants? Perhaps a cut worm chopped it off once or twice; perhaps the corn root borer, the wire worm held it back—insect injuries then might account for it; many a plant is injured in cultivation, partially uprooted, tramped by horse, nearly covered up—malcultivation. Accidentally held back from these or other causes, perhaps but a few days, it is ever after handicapped in its struggle for existence—it is left behind—and the "distance" flag drops (in this case the pollen) with it on the wrong side of the pole. Then, too, insect injury to silks, unfavorable weather at time of pollenation may have been the "accidents" which have doomed our nubbin. Nubbins they are, yet within their veins may be as vigorous and prepotent blood as is found in their brothers.

No. 17 was not the only nubbin (though it was the most productive one) planted in the heterodox block. While the others had at least one inch of bare cob at the tip, none of them produced any more bare tips than the ears well filled at the tip.

I should not want to be quoted as recommending the use of nubbins for seed. One might make some mistakes in distinguishing between good and poor nubbins; rather more likely than in distinguishing between good and poor fully developed ears. What I do want to get before you is the fact that an accident to a corn plant is no more reproduced in the offspring than is the accidental loss of a finger in man, or the accidental (so far as sheep is concerned) loss of tail in the sheep reproduced in their offspring. As between an undersized but well capped ear and a vigorous, promising but incomplete nubbin, I should choose the latter.

I have considered the bare cob at the tip of the nubbin, now a word about the bare cob at the tip of the otherwise normal ear—the tip which is bare because of incomplete pollenation. The silks from the butt of the ear appear first and gradually those on toward the tip, the latter appearing three to four days after the butt silks, or when the butt silks are four to six inches long. From careful records kept this year with upwards of one hundred plants I found that on the average the pollen began to fall four days after the tassel appeared, while the silks did not appear on the average until six days after the tassels. By far the greater part of the pollen falls in two days, though the period extends to four and possibly to six days. Thus has nature provided for cross-pollenation.

The period of tasseling from a given planting extended the past season over a period of eighteen days. Ninety per cent. of the tassels, however, showed in eleven days and sixty-six per cent. in seven days; not the first eleven or seven days, but in the mid-period.

CHART 2.

Relation between Yields of Stover and Grain.

Ears yielding most stover.			Ears yielding least stover.			Ears yielding most grain.		
Ear	Stover per A. Lbs.	Grain per A. Bus.	Ear	Stover per A. Lbs.	Grain per A. Bus.	Ear	Stover per A. Lbs.	Grain per A. Bus.
J	4977	78.5	D	2360	56.4	L	4319	81.3
V	4622	70.9	A	2560	65.5	M	3555	80.0
L	4319	81.3	N	2560	64.5	J	4977	78.5
R	3982	73.8	G	2844	73.4	T	3555	78.2
W	3697	69.1	I	2951	71.0	X	3662	76.9
K	3662	70.9	Q	3111	62.2	H	3591	75.7
X	3662	76.9	S	3200	71.4	O	3448	74.2
H	3591	75.7	F	3235	68.6	E	3336	73.9
P	3591	73.4	C	3306	70.9	R	3982	73.8
M	3555	80.0	B	3324	71.1	G	2844	73.4
Av.	3966	75.1	Av.	2945	67.5	Av.	3727	76.6

A third of the plants then are early and late arrivals. There should be no trouble about the pollenation of the tips of the early arrivals and likely none as to the butts. Of all the ears harvested the early ones would likely have the best tips, while the very late stragglers will tend to have bare tips. I should expect that, unless the straggler had a good excuse for its tardiness, continued selection of bare tips in the otherwise normal ear would tend to lengthen the season required for its maturity, as continued selection for completely filled tips, regardless of any other consideration, would tend to shorten the season and in time likely the yield.

Three suggestions in regard to tips:

A good tip sometimes has a little bare cob.

A bad tip is oftentimes filled to the point.

A good tip is likely better for being well filled.

Giving attention to the second part of my subject, viz.: What sorts of corn plants (including ears) will give the best yields, I wish to call your attention to the fact that a vigorous plant is usually associated with large yields of grain. In other words, the yields of grain go and come with the yields of stover. I have arranged upon Chart 2 the ten ears giving the largest yields of stover in the order of their rank, and the ten ears giving the smallest yields of stover, together with the yields of grain in seventy bushels as husked. The average yield of grain of the ten ears yielding the most stover is seventy-five and one-tenth bushels per acre; of those yielding the least stover, sixty-seven and five-tenths bushels per acre. In the third series the ten ears which yielded the most grain per acre are arranged in the order of their rank. You will note that in this lot of ten ears all but three are found in the column of ears yielding the most stover. The ten averaged only two hundred and thirty-nine pounds less stover per acre than those of the first series.

CHART 3.

Relation between Weight of Cob and Yield per Acre.

Ten ears having heaviest cob.					Ten ears having lightest cob.				
Ear	Wt. of cob oz.	Wt. of cob dr.	Bus. per A.	Per Ct. of grain	Ear	Wt. of cob oz.	Wt. of cob dr.	Bus. per A.	Per Ct. of grain.
X	2	4	76.9	81.3	P	1	5	73.4	85.2
V	2	3	70.9	80.1	B	1	6	71.1	87.2
L	2	3	81.3	80.8	F	1	7	68.6	83.6
N	2	2	64.5	80.2	D	1	9	56.4	82.6
T	2	1	78.2	81.0	Q	1	9	62.2	85.5
J	2	0	78.5	83.7	E	1	10	73.9	81.9
G	2	0	73.4	82.8	R	1	11	73.8	83.3
C	1	13	70.9	79.9	U	1	11	59.2	82.7
I	1	13	71.0	82.1	A	1	12	65.5	83.9
M	1	13	80.0	82.9	H	1	12	75.7	83.7
Av.	2.025		74.6	81.5	Av.	1.575		68.0	84.0

In Chart 3 I have arranged the ears in the order of their weight of cob—the ten ears having the heaviest cob and the ten ears having the lightest cob. You will note that the ten ears having the heaviest cob yield upon the average seventy-four and six-tenths bushels per acre, while the ten having the lightest weight of cobs give an average yield of sixty-eight bushels per acre. As might be expected, the ears with the heavier cobs average lower in per cent of grain.

The length and shape of kernel, however, figure in the matter of per cent of grain as well as size of cob. Arranging the seed ears in the order of their

CHART 4.

Relation between Per Cent of Grain and Yield Per Acre.

Ears having highest per cent grain			Ears having lowest per cent grain			Ears giving largest yield		
Ear	Per Ct. grain	Yield per A.	Ear	Per Ct. grain	Yield per A.	Ear	Yield per A.	Per Ct. grain
B	87.2	71.1	Y	79.3	63.9	L	81.3	80.8
Q	85.5	62.2	C	79.9	70.9	M	80.0	82.9
O	85.2	74.2	V	80.1	70.9	J	78.5	83.7
P	85.2	73.4	N	80.2	64.5	T	78.2	81.0
K	84.9	70.9	L	80.8	81.3	X	76.9	81.3
W	84.4	69.1	T	81.0	78.2	H	75.7	83.7
A	83.9	65.5	X	81.3	76.9	O	74.2	85.2
H	83.7	75.7	E	81.9	73.9	E	73.9	81.9
J	83.7	78.5	I	82.1	71.0	R	73.8	83.3
F	83.6	68.6	D	82.6	56.4	G	73.4	82.8
Av	84.7	70.9	Av.	80.9	70.8	Av.	76.6	82.7

per cent. of grain (Chart 4) it will be noted that there is practically no difference in the average yield per acre of the ten ears testing highest and the ten ears testing lowest. Ears averaging eighty-four and seven-tenths per cent. grain yield almost identical with those averaging eighty and nine-tenths per cent. grain. Assuming that the per cent of grain in the crop would follow the seed ear (which has not been determined yet), the higher testing ears would lead by less than three bushels per acre.

Taking into consideration the fact that the ten ears yielding the most bushels of corn per acre averaged only eighty-two and seven-tenths per cent. grain, it would look as though it might be possible to insist upon too high a per cent. of grain. Note that these highest yielding ears in this special ear work averaged in per cent. of grain almost identical with the legal standard of Ohio. The latter calls for eighty-two and four-tenths per cent. grain.

THE RELATION OF PER CENT. OF PROTEIN TO YIELD PER ACRE.

Each one of the twenty-five ears used in the choice plot was analyzed by the chemist of the Station for its protein content. In the first three columns of Chart 5 I have arranged the ten ears testing highest in protein, beginning with the highest and giving the yield of each in bushels per acre. The next series gives the ears testing lowest in protein. The highest testing ears averaged twelve and fifty-six hundredths per cent. protein and seventy-one and six-tenths bushels per acre in yield; the lowest testing ear averaged nine and ninety-five hundredths per cent. protein and gave an average yield of sixty-nine and seven-tenths bushels.

CHART 5.

Relation between Per Cent of Protein and Yield Per Acre.

Ears testing highest in protein.			Ears testing lowest in protein.			Protein content of ears yielding best.			Protein content of ears yielding poorest.		
Ear.	Per cent. protein.	Yield per acre Bus.	Ear.	Per cent. protein.	Yield per acre Bus.	Ear.	Per cent. protein.	Yield per acre Bus.	Ear.	Per cent. protein.	Yield per acre Bus.
W	14.63	69.1	A	8.56	65.5	L	11.13	81.3	D	9.38	56.4
V	13.40	70.9	G	9.25	73.4	M	11.81	80.0	U	12.69	59.2
U	12.69	59.2	D	9.38	56.4	J	10.25	78.5	Q	11.00	62.2
X	12.63	76.9	F	9.44	68.6	T	12.25	78.2	Y	12.42	63.9
Y	12.42	63.9	B	9.88	71.1	X	12.63	76.9	N	10.94	64.5
T	12.25	78.2	P	10.13	73.4	H	11.88	75.7	A	8.56	65.5
C	12.25	70.9	J	10.25	78.5	O	11.13	74.2	F	9.44	68.6
H	11.88	75.7	S	10.69	71.4	E	10.94	73.9	W	14.63	69.1
M	11.81	80.0	E	10.94	73.9	R	10.94	73.8	C	12.25	70.9
I	11.63	71.0	N	10.94	64.5	G	9.25	73.4	K	11.44	70.9
Av.	12.56	71.6	Av.	9.95	69.7	Av.	11.22	76.6	Av.	11.28	65.1

As bearing upon the question, note next the average protein content of the ten ears yielding the most bushels per acre and the ten yielding the least bushels per acre. You will note that there is very little difference in the average protein content of these lots of ears. Four of the ten highest yielding ears are found in the high protein column and three in the low; four of the poorest yielding ears are found in the high protein column and four in the low. There is nothing in this year's work or last which shows the protein content of corn to have any material effect upon yield, one way or the other.

With regard to the protein content of the crop grown from these several ears, let me say that the product of but three seed ears of this year's work has yet been analyzed. A composite sample has been taken from each ear grown from ears A, C and W. The crops grown from ear A averaged eleven and sixty-nine hundredths per cent. protein; from ear C thirteen and forty-one hundredths per cent. protein; from ear W twelve and eighty-one hundredths per cent. protein. I account for the superiority of ear C from the fact that its mother analyzed thirteen and twelve hundredths per cent. protein. Ears A and W were of unknown parentage.

CHART 6.

Relation between Stalks Bearing Two Ears and Yield Per Acre.

Ten ears producing most stalks having two ears.			No. of stalks having two ears from ten best yielding ears.		
Ear	Stalks having two ears Per Ct.	Yield per acre. Bus.	Ear .	Stalks having two ears. Per Ct.	Yield per acre. Bus.
N	16.7	64.5	L	7.4	81.3
W	15.9	69.1	M	2.9	80.0
P	14.3	73.4	J	3.8	78.5
G	13.5	73.4	T	4.6	78.2
E	13.1	73.9	X	1.9	76.9
I	13.1	71.0	H	12.0	75.7
H	12.0	75.7	O	8.7	74.2
F	8.8	68.6	E	13.1	73.9
O	8.7	74.2	R	5.1	73.8
B	8.0	70.9	G	13.5	73.4
Av.	12.4	71.5	Av.	7.3	76.6

RELATION BETWEEN STALKS BEARING TWO EARS AND YIELD PER ACRE.

It will possibly turn a little light upon the question of the desirability of encouraging corn plants to bear two ears per stalk if we note the yields of those ears which produced the most stalks having two ears and, as well, the tendencies in this direction of the heaviest yielding ears. I have arranged in order the ten ears producing the most stalks having two ears (Chart 6) and for comparison the per cent. of stalks having two ears grown from the ten best yielding ears. You will note that, as a rule, the ears producing the highest per cent. of stalks having two ears are not among the best yielding ears. The five ears yielding highest have comparatively a low per cent. of stalks having two ears.

The question is asked if in growing corn to feed from shock it would not be an advantage to encourage two ears to a stalk, thereby getting smaller ears that could be mouthed better by cattle. The same object could be secured by thicker planting and I should expect that more feed per acre would be harvested. Not only more stover, but more grain.

CHART 7.

Barren Stalks in Corn.

Complete fertilizer plots for the years				No fertilizer plots for the years			
Plot.	1896	1897	1902	Plot.	1896	1897	1902
11	..	64	10	1	73	208	67
12	..	99	15	4	114	96	29
14	..	124	25	7	66	93	41
17	38	98	27	10	42	124	49
18	21	78	27	13	17	91	40
20	4	39	13	16	16	260	41
21	70	83	22	19	47	190	26
23	46	125	21	22	103	200	34
24	18	80	31	25	32	129	23
26	11	70	15	28	60	75	25
27	13	61	12	..	..	..	..
29	23	72	13	..	..	..	..
30	23	63	34	..	..	..	..
Av.	20.5	81.2	20.4	Av.	57	146.6	37.5
3 year average..................40.7				3 year average....................80.3			

THE BARREN STALK.

A word about the barren stalk. The loss in our corn fields on account of barrenness amounts in some seasons to a considerable per cent. Whether it can be eliminated by breeding I am not so sure. Of one thing I am sure; there is a wonderful variation in the number of barren stalks year by year apart from the efforts of the corn breeder. Certain it is that the season has a great deal to do with the amount of barrenness. I want to call your attention to the effect of season and fertility upon the number of barren stalks (Chart 7) as shown by careful counts made in our fertilizer work with corn three different seasons. We have first the thirteen plots which are treated with complete fertilizer, so-called—those carrying nitrogen, phosphorus and potassium—with the number of barren stalks per plot for the three different years, 1896, 1897 and 1902. The variety of corn was the same each season and culture and fertilizer the same. Taking the average for each season you will note that in 1896 the plots averaged twenty and five-tenths barren stalks; in 1897 eighty-one and two-tenths, in 1902 twenty and four-tenths. In per cent. of barrenness they run two and one-fourth per cent, nine per cent. and two and one-fourth per cent. Four times as much barrenness in 1897 as in 1896. Surely the season must have a vast deal to do with it.

And you will note that we have practically the same differences the different seasons on the no-fertilizer plots; and in addition you note a considerable difference the same season between the fertilized and the unfertilized plots. To get at the matter quickly, the average number of barren stalks per plot for the three seasons was forty and seven-tenths upon the fertilized plots and eighty and three-tenths upon the unfertilized, the per cent. of barrenness being four and five-tenths per cent. and nine per cent. respectively. This variation, remember, is independent of any detasseling of barren stalks, of any selection to weed out barrenness. I can imagine that had I been working to weed out barrenness upon plot sixteen, for instance, and had succeeded in the year 1896 in reducing it down to one and five-tenths per cent., I should have felt very good indeed—at least until the following year when I had counted up thirty-five per cent. of barren stalks. Please remember that the crop of 1896, which produced only two and one-fourth per cent. barren stalks, furnished the seed for harvest of 1897. And also remember that 1896 was the most favorable corn season in the decade, and 1897 one of the worst—especially so in northeastern Ohio.

In addition to the effects of season and fertility I should mention the rate of seeding. With all other conditions the same the past season, we found as low as one and seven-tenths per cent. barrenness where we had two plants per hill, and ten and seven-tenths per cent. with five plants per hill. The great influence of season, of fertility, of rate of seeding almost leads the corn breeder to think that his part in the matter is slight. In our corn breeding work we have seen very little evidence that would lead us to believe that there was anything hereditary in barrenness; and yet it is a matter that needs further investigation.

Shall we then not detassel barren stalks? As a matter of fact it is a little difficult to be real sure when the tassel first shows whether a plant is going to be barren or not. We can, however, detect weakness, lack of vigorous growth, and it is perhaps of as great, or even greater importance, that such plants be detasselled than the barren ones alone. This, of course, for the breeding or seed plot only.

I may say in conclusion that the few facts gleaned from the Station corn fields seem to show that undesirable characteristics in the ear of corn perpetuate themselves in their offspring with great certainty, save when such characteristics may be due to accident and therefore temporary in their nature; that there is a close connection between vigorous plants—large yields of stover—and large yields of grain. More time will be needed and larger numbers of tests to determine what relation per cent. of grain may have to yield, but it will not be unexpected if a good sized cob is associated with the vigorous plant and the large yield of grain.

That the protein content of corn has little or no effect upon the yield, at least when the supply of humus is abundant.

That two ears of corn to the stalk is not an important factor in increasing the yield.

That factors over which the corn breeder has little control make for or against barren stalks with a degree of success which discounts anything the breeder is able to do.

All of which is subject to revision without notice as our knowledge increases with the progress of the seasons. (Long applause.)

The President: Ladies and Gentlemen: This excellent paper is now for your discussion. We will spend a reasonable length of time in questions or in statements as to the subject in hand. My old admonition again, be prompt and alert in what you say, for we must have done with this program before nightfall.

Mr. Begg: I would like to ask Mr. Williams if the season did not have something to do with the production of the greater part of barren stalks in the column of 1897? Wasn't it dryer that year than usual? My recollection is that that year was very dry, and it may be that had something to do with it.

Professor Williams: Yes, that was a point that I tried to make—the effect of season upon barrenness. The year 1896 was perhaps the best corn year of the decade, and 1897 was one of the very worst. I think in northeastern Ohio it was about the worst of the decade.

Mr. Begg: Naturally, we would suppose if the season controlled it, we would have little or no control over it, any more than we would overcome the effect by producing moisture in the soil.

Professor Williams: Yes, sir; but remember that weather conditions, fertility, rate of seeding—all have a bearing, and *possibly* inherited tendencies.

Professor Lazenby: There was one point that interested me very much in this very interesting address. That was the fact brought out by Professor Williams that the bare tip was due to imperfect pollenation. Now, I must admit that I think a little too much stress, perhaps, has been put upon that point, and for this reason, in tests that I have made in artificially fertilizing corn, I find that wherever the pollen is blown in that way, the kernels are distributed throughout the ear, and I never have been able to quite believe that when an ear had perfect corn—that is, was perfectly filled with corn, up to a certain point, and then none appeared, that it was a matter of lack of pollenation entirely. It may be in part, but not entirely. The corn is not a fruit in itself, but the whole ear itself. The cob of the corn is nothing but a branch, and the kernels of corn on this branch are just like the fruits on Mr. Miller's plum trees, or anything else, and I think that the lack of the filling out of the ear is more largely due to the fact that that individual ear has not the knowledge, we might say, or the ability, to produce perfect fruition, the flowers at the top of this branch not being in condition to receive it at the time it fell.

Now, I do not wish to speak too positively on this, and I think we want to be fair to both sides; we do not want to say that the male organ or the female organ may be lacking or to blame. But to put it all on to the lack of pollenation is not quite fair, and, perhaps, you gentlemen have observed that whenever a corn stalk grew by itself, as they accidentally do, occasionally, and where we know fertilization is very imperfect, that there we are likely to find kernels on the corn all in one place, at the base of the cob, or we are likely to find the kernels distributed on the limb or shorter branch.

Mr. Chauncey: I would like to ask the professor, in those seed ears whether they used all the grain on the ear, or whether the tips or butts were shelled off?

Professor Williams: The tips and butts were shelled off.

A member: I would like to ask a question of the professor. If his address reveals anything, it reveals that great care should be taken by the farmer to select his seed corn, and I would suggest that a great deal of time and a great deal of labor is necessary for the proper selection of that corn. Is not this fact then the one that has led to the organization of corn breeders' societies, whereby they can secure someone to take charge of a breeding plot, that they may not be bothered with the work necessary to get the corn for them?

Professor Williams: I think corn breeders may be very helpful to each other by organizing. The improvement of our seed corn is a vital, if not an easy proposition. Progressive farmers will not care to turn it over to others, particularly to breeders of other states, for corn improvement, unlike some other crops, must ever be a local matter. Ohio might well have an organization of her own corn breeders.

Mr. Rankin: I would like to ask Professor Lazenby if he thinks his explanation of the imperfect filling out of the ear would affect the grains that were perfect on that ear; whether it would affect the reproduction of it; I would like to know what he thinks about this question.

Professor Lazenby: No, sir; if the grains were perfect, and the pollenation perfect up to a certain point, I do not think it would. I would like to think of an ear of corn just as I like to think of a nicely fruited branch on a fruit tree, and we know that the branch can only perfect so many fruits. Now, we know the corn has got in the habit—many of our varieties—of filling right out to the end, whose every flower is perfect, and if pollenated, producing its fruit. But we have some other very good corn, and I think where we find that lack of filling out to the end, it is due sometimes to lack of pollenation probably, but in other cases often due to the fact that that particular stock has only the strength to produce so many flowers that were capable of being fertilized.

Mr. Rankin: Simply because they were not filled out to the end would not necessarily cause them to be rejected, would it?

Professor Lazenby: No, sir: not wholly. I think that was brought out in the experiment.

Mr. Snider: I don't exactly get that right. Does the protein reproduce itself in the ears that had the more protein?

Professor Williams: Yes. In the breeding work which I have reported, while yield was the main object aimed at, each seed ear was analyzed for its portein content. They varied in per cent. of protein from 8.56 per cent. to 14.63 per cent. The seed which had the most protein and the best protein ancestry yielded corn with high average protein content.

Mr. Snider: I would like to ask another question of the speaker, if he will be kind enough to answer. I have heard it said that the kernels on the butt end of the ear are formed first, and so by planting those for a number of years, you would get an earlier ripening corn than by planting the middle or any other part of the ear. I would like to know whether such is the case or not?

Professor Williams: I may say that Professor Hickman conducted experiments for nine years, in which kernels from the butt and middle and tip were planted, year after year, and each year after the first the butt kernels, for instance, were taken from seed ears grown from butts the year previous; the same with the tips and the middle of the ear, and there was practically no difference in yields, and as I understand it, no difference in season of maturity.

Mr. Snider: Then it makes no difference what part of the ear you plant?

Professor Williams: No, sir; save that a more uniform stand can be secured from kernels of uniform size.

A member: In our locality, a few days in the time of ripening made a great deal of difference in the yield of corn. In going through a piece of corn before cutting, some ears seemed to be ripe, while others were not. Can we, with the same variety of corn, get an earlier maturing corn by going through the corn and selecting these ears that ripen first?

Professor Williams: Yes, sir; I think you can affect the earliness of your corn by that sort of selection. I would not, however, remove the ear from the stalk at that time. There is no place so good for that ear for some time as on the stalk. Tie a string to the stalk so you can find it and leave it there until the field is husked.

The President: We will have to close the discussion in five minutes.

A member: Did I understand Mr. Williams to say that the use of seed ears that filled out over the tip would tend to shorten the ears?

Professor Williams: I think if you select seed corn with that one end in view that will be the tendency. The completely capped ear nature has finished. She has done all she could for it. Likely she could have done no more, even under more favorable environment. Whereas, the ear with bare cob at the tip was looking for something in the way of environment which it did not receive. Its use for seed would tend to lengthen the ear and likely call for a longer season.

Mr. Taylor: As I was called out, I intended to ask Mr. Judy how he cared for seed corn. I did not get the chance at the time. Mr.

Judy stated that he put it upstairs. Is it better to put it upstairs or in the cellar? I am very particular in picking my seed corn, and after picking it, I put it in the cellar, and I find that a very good place to keep it. I string wires between the posts or joists and hang it up between the joists. We get from that very excellent results.

Professor Williams: I have never tested that matter, and it would be guess work on my part. I have met several men in the state who have had your experience. They speak favorably of it, and if you have secured good results I certainly would not discourage you in continuing the practice. There is nothing so good as actual experience. My plan with seed is very much like Mr. Judy's. I would hate to have the corn in a damp cellar, and yet if the temperature is uniform there may be no damage to it. Extremes of temperature and moisture are to be avoided.

Mr. Taylor: We have no furnace in our cellar, but we have a very good cellar. I found one year in putting our corn in, that we put in some that was not quite dry enough and there was a slight mould formed between the grains, and we were afraid that might hurt the corn. In selecting the corn in the spring we always select it the second time, and we planted some of that that had the slight mould on it, and it did not affect it at all. The corn grown from that was just as good as the corn grown from the grain that was not mouldy. I think if the corn is a little damp when it was put in it might do some harm. Our cellar is very dry and we have had very good results, and I believe, under such conditions, it would be as good as the room upstairs. Of course, the temperature should be kept uniform.

Professor Williams: Seed corn can be ruined before it has thoroughly dried by too much heat coupled with too little ventilation. I have known it to sprout under such conditions.

A member: I would like to ask the speaker this question: Which would give the best results, to pick the corn before it is cut, and hang it up with the husks on, or else husk the corn and rick it up?

Professor Williams: How is that?

A member: Which would give the best result, to pick the corn before the corn is cut and hang it up with the husks on, or else take the corn later, and rick it up?

Professor Williams: I would prefer to select the corn on the stalk. I think it important that our good ear of seed corn be grown in competition with its neighbors. The only way you can be sure of this is to select in the stalk. Now, it is quite customary, we have practiced it ourselves, to select corn as it is husked, picking out the largest and nicest ears. I expect if we could follow these ears back to the stalk, we would find they had grown one stalk to the hill—their excellence being due to environment. Select in the stalk before corn is cut, but don't remove it until the usual husking time. Then hang or rick it up so the air can circulate through it.

Mr. Smith: If corn is matured, or ripe, and it is dry, is there any degree of cold temperature, that will have any effect on the germination of the corn? Is it necessary if the corn is dry to put it in any warmer place than the crib?

Professor Williams: While we have made no tests bearing directly upon this question, the evidence of others is that corn thoroughly dried out cannot be injured by freezing. It should be remembered, however, that corn once dried out may take up much moisture. Old wheat, you know, will take up a good deal of moisture. We have made no tests along this line, but I would prefer to keep it where the temperature was moderate.

Mr. Smith: I have done this a number of times. I don't know whether it is the best thing to do or not. But for fear that the seed corn might not be thoroughly dry, I have taken it into the corner where my oats are stored, and I will throw three or four bushels of corn on to the oats, and then shovel oats on top of that. And if there is any moisture in the corn it would be absorbed by the oats, and any time I need the corn it is all right.

Professor Williams: If it was dry when you put it in the oats it would be all right.

Mr. Smith: Well, if it was not quite dry what would be the result?

Professor Williams: Well, I would rather have it dry and dried in the open air.

Mr. Rankin: I have experimented a little with the way of taking care of seed corn. Of course, there are a great many advantages of selecting corn while it is yet on the stalk. But so far as preserving the vitality is concerned, I have never seen any appreciable difference in husking corn and hanging it up by the shucks in a dry place, and thus taking care of it through the winter, and selecting good, dry ears in husking time and putting them by themselves where there is a free circulation of air all the time. I have never seen any difference in the germinating of the grain. However, there was a little instance came under my observation with reference to the vitality of seed corn. Two years ago I had some corn planted—it was white corn—and the man who was planting it lacked a few ears of finishing it. So he had gotten a few ears of white corn that had been kept in one of the banks at our county town, and he had selected his seed corn very carefully that he planted, and he lacked these few rows of planting it, so he put these ears that had been kept in the bank all winter, not knowing whether they had ever been subject to freezing or not. Now, I tell you that the vigorous appearance of those stalks was observable for hundreds of yards, looking across that field, particularly because of the fact that those grains had been kept dry and they produced a stronger stalk. Now, up until that time I had thought that if there was vitality enough in the seed to produce a strong stalk, that was all-sufficient. I think it is well enough to always keep seed corn where it will not be subject to any extreme of heat or cold through the winter. By doing this the farmer is pretty reasonably sure of a good crop the following year. But you must keep the corn dry.

The President: We will have to close the discussion. There is a call for miscellaneous business. Is there any miscellaneous business? If there is none to be brought before us at this moment, I am informed that the Cecilian Ladies' Quartette have one of their best numbers selected for us now, and we will listen to their charming voices.

Music by the Cecilian Ladies' Quartette.

The President: What is your pleasure now, gentlemen?

Mr. John Begg: It seems to me that we have enjoyed a very nice institute, and everything has been very pleasant. The chairman has executed the will of this body with promptness, faithfulness, and in a very pleasant manner, and I think we can't do anything more fitting than to pass a resolution of thanks, thanking him at the conclusion of this institute for the manner in which he has conducted the work. And, therefore, I move you, Mr. Chairman, that a vote of thanks be tendered our worthy chairman for the splendid manner in which he has presided over this session.

The motion was duly seconded and carried unanimously.

The President: Gentlemen, if you will stay just two or three minutes, I have a word to say to you.

Now, if I should act according to the beating of my heart, I would commence with the State Board, those worthy men who have planned all this, and I would pass down among you missing none, grasping the hand of each one present and congratulating you upon the part you have played in making this institute what it is today. For, in your hearts you have voted success for this institute, and we have been successful.

Standing as I do in an atmosphere of perfect freedom, may I say that I will drop a word for the encouragement of my brother institute workers? I am acquainted with almost all of them, having met them in many ways and places in life. They are modest gentlemen, and I sometimes think that they do not realize the importance of the position they occupy. They carry good news to the farmer. Without exception, I think they do grand, good work. And they carry these works with the spirit of truth, resonance and enthusiasm. He who stands highest in the agricultural world of the State of Ohio has said that perhaps the most that we can do is to give good cheer unto the farmer, for the farmer who is in good heart is sure to advance. That advancement will be of a character to leave him on a higher plane, and will lead him up and on to success. And, brother and sister farmers, that success will be satisfactory.

One of the things that I think the farmers' institute man does, more than others, is that he gives unto the farmers by the thousands—seventy thousand will be directly interested this year—he gives to them a spirit of contentment in their work. Man, as a rule, is likely as you know to be discontented. You have heard of those two men who stood by the wayside, each bewailing his wife. One had buried his wife and the other had not. (Laughter.)

The institute man comes with hope and cheer to the farmer, and it is a high mission that he performs. I encourage and congratulate each man who labors in this grand work. There is nothing better than the farm, nothing better in the wide world. It is recognized by the business world, and we look to it for our best ideals.

I stand sometimes behind the gilded bars of our Union National Bank in our city. It is a pleasure to me look at the high piles of money there. As I stand there, Mr. Landon, from Fourth Avenue, comes in, and he says to Mr. Brown, the President, "We are doing business in Fourth Avenue. Last year we did one hundred and fifty thousand dollars' worth of business. This year I think we will do better. I would like to have a few dollars to tide us over a few days, Mr. Brown." Mr. Brown looks kindly at him through his gold-rimmed eye-glasses, and says, "We will be glad to accommodate you, but you must comply with our rules, by having two good men go your security." He goes, gets the men, and gets his money. As he passes out, John Smith comes in, and he says to Mr. Brown, "I would like one thousand dollars to buy a few cows down in our country. I think I can make some money out of it." Mr. Brown says, "Give us your note and you can have it." (Applause.) Now, gentlemen, the President of that bank is a personal friend of John Smith, and he knows that he is a business man or a farmer, and he knows that there are forty acres of good real estate behind John Smith, which can't blow down, burn down, or be washed away during the night. There is nothing better in the eyes of the business world than the farm. If I should speak personally, I will say that this experience, while I look upon it with a great deal of dread, has not been unpleasant. Your upturned faces and your hearty handshakes have done a good deal for me, and have helped me in my efforts to conduct my office properly. And, gentlemen, I believe and place a good deal of reliance in the hearty handsake. It is a little sentimental, but it has done much for us.

And now, good friends and farmers, I pass down from before you, and if I have made any acquaintance with you, I hope that acquaintance will be kept up, and if I should progress higher, if I should become an inmate or superintendent of the Ladies' Home down yonder, I want you to come right forward and greet me as you have done today. I shall be glad to see you. (Applause.)

But, good people, if I ever become Governor of Ohio, I never expect to part with that idea, that great mistake that is prevalent in the social circles of our land and other lands, in ever bringing forth a man who can write his check for fifty thousand dollars in preference to the man who owns forty acres of land, and has paid his debts, and is living a full, round life. I thank you all. (Great applause.)

Mrs. Mary Lee: It seems fitting, does it not, that we extend a vote of thanks to the State Board of Agriculture and Secretary Miller for the very excellent institute that they have enabled us to have. It is simply to attest our appreciation—the law may compel it—but we appreciate it, and it will be a privilege to extend to them a vote of thanks.

Motion seconded.

A Member: I will amend that by including the Cecilian Ladies' Quartette. They have furnished to us the best of music and added to our enjoyment of the institute, and therefore I move that amendment.

The President: You have heard the two motions, or rather the motion by the member, Mrs. Lee, and the amendment, that we extend to our delightful entertainers, the Cecilian Ladies' Quartette, our thanks for what they have done to make our institute successful. All in favor of the motion and the amendment vote aye.

Motion and amendment carried.

The President: Now, we will hear again the Cecilian Ladies' Quartette, and then a motion for adjournment will be in order.

Music by the Cecilian Ladies' Quartette, who sang, in conclusion, "Nellie Gray."

Upon motion, duly seconded and carried, the institute then adjourned sine die.

Report of the Annual Meeting

OF THE

Ohio State Board of Agriculture

Held in the Hall of the House of Representatives, in the City of Columbus, Ohio

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THURSDAY MORNING SESSION, January 12, 1905.

The Ohio State Board of Agriculture met in annual session in the hall of the House of Representatives and was called to order at 10:10 a. m. by President Carpenter, who said: The State Board of Agriculture will now be in order.

You will please arise. Prayer by Dr. Chamberlain.

Dr. W. I. Chamberlain, of Summit county: For the blessings of the past year we give thanks unto the Great Giver of all good. Thou hast smiled upon our fields and they have yielded their increase; our flocks have been blessed by Thee; the business interests of this great commonwealth have responded, and not only the farms but the shops and the homes have thrived; have been blessed; to Thee we render profound thanks for these blessings. And we ask that the same loving hand which has bestowed them in the past will grant them to us in the year upon which we have entered.

We ask Thy blessing upon the deliberations of this day, that all may be done in Thy fear and may result to Thy glory, which we ask for Thy name's sake. Amen!

President Carpenter: We will now have a song by the Cecilian Ladies' Quartette.

A song, "When the Bloom is on the Rye," sung by the Cecilian Ladies' Quartette. (Applause.)

President Carpenter: Gentlemen, I will now appoint a committee to wait upon the Governor and notify him to appear before you for his address. Your committee will consist of:

Hon. T. E. Cromley, of Pickaway county; Mr. A. F. Shaffer, of Fulton county, and Dr. H. M. Brown, of Highland county.

The committee will please retire at once to the Governor's office and notify him to be present.

I will also appoint a Committee on Credentials, which will consist of:

Mr. A. J. Clark, of Guernsey county; Mr. John B. Lindsay, of Meigs county, and Mr. C. F. Steen, of Erie county.

The secretary will now call the roll of counties.

On the call of the roll of counties the following delegates responded to their names:

LIST OF DELEGATES.

COUNTIES.	NAME.	POSTOFFICE.
Adams	W. S. Kincaid	West Union.
Allen	J. A. States	Beaver Dam.
Ashtabula	W. H. Dodge	Dodgeville.
Athens	H. H. Haning	Athens.
Auglaize	Charles Frazier	Uniopolis.
Belmont	D. S. Creamer	St. Clairsville.
Brown	V. K. Thompson	Georgetown.
Butler	W. A. Beard	Oxford.
Carroll	T. H. Watson	Minerva.
Champaign	J. W. Crowl	Urbana.
Clermont	C. H. Ludlow	Gleneste.
Columbiana	W. M. Travis	Lisbon.
Coshocton	Robert Boyd	Coshocton.
Crawford	J. W. Stuckman	Bucyrus.
East Cuyahoga	E. C. Foote	Warrensville.
West Cuyahoga	W. G. Hutchinson	Brooklyn.
Darke	J. M. Brown	Arcanum.
Defiance	W. H. McCauley	Defiance.
Delaware	T. R. Smith	Delaware.
Erie	C. F. Steen	Sandusky.
Fairfield	Jacob L. Alspach	Lancaster.
Fayette	Reuben Rankin	Parrott.
Franklin	E. A. Peters	Groveport.
Fulton	A. F. Shaffer	Wauseon.
Gallia	C. G. Kerns	Gallipolis.
Geauga	J. I. Wilber	Chagrin Falls.
Greene	C. M. Austin	Bellebrook.
Guernsey	A. J. Clark	Cambridge.
Hamilton	D. L. Sampson	Silverton.
Hancock	E. L. Groves	McComb.
Hardin	J. M. Fisher	Ridgeway.
Harrison	W. V. Scott	Hopedale.
Henry	P. Z. Blue	Deshler.
Highland	H. M. Brown	Hillsboro.
Hocking	Henry Hansel	Logan.
Huron	Howard Lawrence	Monroeville.
Jefferson	J. O. Hayne	Smithville.
Lawrence	U. T. Cox	Rockwood.
Licking	J. Willis Fulton	Newark.
Logan	John P. Aiken	Bellefontaine.
Lorain	Anthony Nieding	Elyria.
Lucas	E. H. Cushman	Sylvania.
Madison	L. W. Kilgore	London.

COUNTIES.	NAME.	POSTOFFICE.
Mahoning	C. C. Bowman	Berlin Center, R. R.
Marion	H. W. Cookston	Cochranton.
Meigs	John B. Lindsey	Pomeroy.
Mercer	C. F. Kruger	Celina, R. R. 4.
Miami	W. F. Robbins	Piqua.
Montgomery	S. D. Bear	Dayton.
Morgan	A. E. Corbert	McConnelsville.
Morrow	J. M. Farley	Edison.
Muskingum	R. Y. White	Chandlersville.
Ottawa	George W. Sloan	Port Clinton.
Perry	Chas. C. Chappelear	New Lexington.
Pickaway	J. A. Baum	Duvall.
Pike	J. W. Theobald	Beaver.
Portage	C. R. Doolittle	Streetsboro.
Preble	John J. Kayler	Eaton.
Putnam	A. P. Sandles	Ottawa.
Richland	W. H. Shyrock	Mansfield, R. R. 8.
Ross	E. E. Rockhold	Bainbridge.
Sandusky	J. J. Brim	Woodville.
Scioto	W. A. McGeorge	Mt. Joy.
Seneca	J. H. Knapp	Republic.
Shelby	J. C. Royon	Houston.
Stark	J. J. Snyder	Paris.
Summit	O. J. Swinehart	Akron.
Trumbull	A. Brown	Warren.
Union	F. C. Johnson	Claibourne.
Van Wert	B. F. Leslie	Convoy.
Warren	George W. Carey	Lebanon.
Washington	J. S. Duvall	Marietta.
Wayne	G. J. Ebright	Shreve.
Wood	W. H. Hannah	Tontogany.
Wyandot	E. E. Clinger	Upper Sandusky.

President Carpenter: Gentlemen of the Ohio State Board of Agriculture: I want to thank you for the inspiration it gives me to look into your intelligent faces. This splendid audience is an earnest of your intent to keep Ohio always to the fore in all that pertains to higher material and social wealth.

In the address which I shall make, which is fraught somewhat with statistics, I hope you will find some food for reflection.

ANNUAL ADDRESS BY PRESIDENT J. L. CARPENTER.

It affords me great pleasure to be permitted to join my fellow-workers in this meeting, being the sixtieth annual since the original law creating the State Board of Agriculture. The conditions of agriculture and manufactures in Ohio have vastly changed and wonderfully progressed since the early meetings of this body. Each succeeding year, up to the present time, progress has been steady and real, and to the pioneers in the work we are largely indebted for our present high attainments and important standing, in the nation and the world, as an agricultural and manufacturing State, and for a citizenship pronounced in example and leadership in all affairs and on all occasions. The flag of Ohio has never been lowered and the farmers of our State have never marched in the lines of retreat. They have fought the battles of progress; scaled the walls of opposition and depression; have withstood all the storms incident to greater development and now enjoy the degree of success that commands the attention, the respect and the admiration of all classes.

The present advanced position and high social and political rank of the Ohio farmer is the result of his determined and persistent fight and desire for all the benefits of education, and his pursuit and adoption of improvements and conveniences that bring the farmer in closer touch with the city and with city advantages.

The farmer is no longer the isolated individual who receives the news of the world but once a month, but a man well informed in daily events as they occur, and hence the equal of his city brother in discussing public problems, in forming conclusions and in knowledge of the markets and the principal marts of trade.

Our agriculture is closely linked with our manufactures. Upon the success of one is the dependency of the other, and hence the State Board of Agriculture, in all its work, has planned to foster, encourage and promote these two fundamental industries of our State. Their importance is grandly significant when we contemplate their vastness and their relations to every other interest that has combined to build up this commonwealth to a position first among the states of the nation.

We do not realize the greatness of Ohio agriculture until we study the census reports. Here we are informed that at the last account taken there were two hundred and seventy-six thousand seven hundred and nineteen farms, occupying twenty-four and one half million acres of land. The capital invested in these farms was one billion, thirty-six million, six hundred and fifteen thousand one hundred and eighty dollars, and when we add to this the value of the farm machinery and the live stock, we have a total reaching the enormous sum of one billion, one hundred and ninety-eight million, nine hundred and twenty-three thousand nine hundred and forty-six dollars. In the operation of our farms there is an annual expenditure of seventeen million dollars for labor and fertilizers. Is agriculture an important industry? Does it demand the best attention of its representatives? On these questions there is no doubt, no division of opinion, and we should, therefore, carefully consider every proposition affecting agriculture and seek to inject the best methods in the transaction of our business, and surround ourselves with every protection possible and with every advantage to be secured.

The annual value of Ohio farm production is close to three hundred millions of dollars, and the value of farm live stock about one hundred and twenty-six million dollars. These enormous figures bring vividly to our minds the relation of the farmer to the State and his claims for recognition in the management of her affairs.

That agriculture and manufacturers are closely linked is further evidenced by the fact that seventy-eight large establishments, in Ohio, are in operation producing strictly agricultural implements, in which is invested nearly twenty-four million dollars and employing seven thousand workmen, who receive over three million dollars annually in wages. The production of these establishments has an annual value of fourteen million dollars, and if we were to add to these the one hundred and eleven flour and grist mills, employing twelve million dollars of capital with an annual output valued at thirty-seven million dollars, our importance proves greater and greater, and the necessity for intelligent action in sustaining these great industries becomes more and more apparent. I am glad to observe that the law making powers of Ohio, and the administrative officers of the State, have given careful attention to our interests by the enactment and enforcement of wise laws and the appropriation of such sums of money for the advancement of agricultural work and agricultural education, as has been consistent with the revenues of the State and the demands of our interests, as they have from time to time been made to appear.

In aid of agricultural improvement and agricultural education, including the State University as a whole, the last General Assembly, in its appropriation acts, endorsed and approved by the Governor of the State, gave evidence that our interests and requirements have been liberally considered within the revenues of the State. There has been no unwillingness on the part of our legislators or executive officers in giving to agriculture as full recognition as has been possible to give. No fair-minded citizen will ever expect the impossible.

The appropriations referred to continued the liberal policy that has usually prevailed in the interest of agriculture, and are as follows:

To the State Board of Agriculture	$102,000 00
And in addition to this the State has provided for interest and principal as becoming due on the bonds issued for buildings and improvements on the State Fair grounds.	
To the Ohio Agricultural Experiment Station	63,700 00
To the State Board of Live Stock Commissioners	9,882 50
To the State Horticultural Society	1,000 00
To the Ohio State University	657,750 00

We have evidence all about us, throughout the fabric of our State and general government, that agriculture is now, even more than ever before, recognized as not only the basis of our civilization, but the basis and support of our material progress, and that the greatest and most valuable crop of the farm—the farmer's boy—is in greater demand than ever before. The present governor of our own State is a product of the farm, and he is, therefore, in closest touch and sympathy with everything pertaining to farm interests. He has knowledge, from his own experience, of the needs of the farmer, and he has, upon all occasions, strongly expressed himself as favoring all consistent measures that tended to encourage agriculture and promote the best interests of the agricultural classes. We need governors who understand and are in sympathy with the great work of agriculture, and who have the discretion and ability to act wisely at the proper time and without regard to any personal ambitions or personal preferment.

The farmers of Ohio owe to Governor Herrick their highest endorsement of his stand in their interests, as best understood.

As to the particular work of the Ohio State Board of Agriculture, I shall make but brief reference, because its work is quite familiar to you all.

The County Farmers' Institutes, under the control and management of the Board, continue most successfully, meeting a popular demand and bearing great weight in broadening agricultural education, and bringing the farmer in closer touch with his neighbor and with everything pertaining to advancement in his calling.

The gathering, publication and prompt distribution of crop and stock statistics continues for the benefit of farmers in the distribution of his crops from season to season, that growth may be profitable, and the demands of consumers met in which all classes are intensely interested.

The well established system of commercial fertilizer inspection, by the secretary of the State Board, has long since been generally recognized as a great necessity, not alone for the farmers who must resort to the use of fertilizers, but for manufacturers who offer their goods upon the Ohio markets. About one hundred and twenty manufacturers of fertilizers seek the patronage of Ohio farmers, and near seven hundred brands of goods, adapted to different plant growth, are found upon our markets, which, by the provisions of the law and the rigid work of inspection, are well known in chemical ingredients, and no farmer need be compelled to purchase blindly.

The last General Assembly placed another duty on the secretary of the Board of Agriculture, similar in its workings to the fertilizer law. A bill was enacted into law providing for the inspection and analysis of commercial feed stuffs, and under the provisions of this law farmers and manufacturers will receive the same guidance and protection that has been and is being given them through the fertilizer law. All feed stuffs offered for sale in Ohio will be inspected and analyzed, and the findings published for the information and protection of those interested. This law is far reaching in its benefits and will result in much good to the live stock interests of the State.

The work of inspecting nurseries and orchards, for the eradication of insect pests that have such disastrous effects in orchard production, and in guarding against the distribution of diseased nursery stock, has been carried on by the proper division of the Department of Agriculture, and the particular results of the work will be found in the reports and bulletins of that division.

The State Board of Agriculture, as the Board of Live Stock Commissioners, has conducted its investigations and its work with very marked success, having had several serious outbreaks of disease to contend with during the year, but succeeded in preventing spread of the same and thereby avoiding great loss to owners, breeders and feeders and benefiting the State in a measure beyond calculation. The reports of the Board and its veterinarian give a detailed account of the diseases that have broken out and the means taken to eradicate the same.

The State Fair, ever near to us, and having such close relation to every county of the State, continues to be a leader among all the state fairs of the land. Its growth, in many respects, is phenomenal. At the annual exhibitions farmers and manufacturers clasp hands over their achievements and the general public is benefited by the great object lessons presented in each of the many art and industrial departments and divisions of the fair. The State Fair is a college of learning, a guiding star for the masses who avail themselves of its educational advantages.

The exhibition of 1904, notwithstanding the great counter school at St. Louis, was a success beyond the expectancies of its nearest friends.

Every department was filled with the best the farm, the shop, the factory, the studio and the home were able to and had produced, and the interest manifested by the people of the State, by their generous attendance, was assurance that the efforts of the Board, in providing an exhibition fraught only with the elements of education, was truly appreciated.

Each department of the fair is yearly growing greater and greater, and it becomes a study of your Board to meet the demands upon this growing institution. Nowhere was this more evident, the past year, than in the department and divisions of machinery and agricultural implements; these manufacturing interests completely filling all available building space and also stretched out over acres of open ground, in presenting the lessons of relationship to the farm. The Board found itself facing the necessity for greater and better facilities to accommodate the manufacturers of the State, in presenting to the people their important exhibits.

Building facilities more nearly equal to those which have already been provided for farm production and for live stock, by the approval and aid of the General Assembly, are now under way for the manufacturing interests, and these buildings will be completed in ample time for the State Fair of this year, 1905. There will be two great machinery exhibition buildings that will accommodate the increase of exhibits in this important direction, and better serve the purposes of illustrating the workings of the many kinds of machines and implements now necessary in the profitable cultivation and harvesting of our diversified crops; in the handling and manipulation of our products, and for every purpose connected with the farm, the forest, the orchard, the dairy and the stock yard. The Board has also under way a new and up-to-date poultry exhibition building, and when the State Fair of 1905 is thrown open to the public there will be many evidences of improvement to maintain its reputation as a leader, and bring credit to the State that always leads in that which is for the people's good.

As interested workers in agricultural and manufacturing promotion, we are proud of the State Fair of Ohio; proud to know that it has been builded up to, and is recognized and admitted to be one of the important educational institutions of our State, and that it is pointed to by other states seeking to advance their agriculture and allied industries, as a model after which to pattern.

In the success of the State Fair every member and officer of your Board has labored earnestly and every county has responded nobly. As the presiding officer of the Board, I wish in this public manner to express my appreciation and thanks to each member and officer of the Board for their valuable labors, and to the various county societies for their harmonious co-operation in presenting Ohio in her best colors.

Gentlemen, I do not wish to detain you longer, and will only add that I hope many things will develop and crystallize in this annual meeting that will add materially to our welfare and the good of the State, and that the year upon which we are just entering may be noted for many advances and many comforts and benefits to all the people; and now, thanking you for your kind attention, we will proceed with the program of the meeting.

President Carpenter: We will have music by the quartette.

A song, "Old Black Joe," sung by the Cecilian Ladies' Quartette." (Applause.)

President Carpenter: Gentlemen, my only apology for introducing my address before the Governor spoke was his request that I do so, and I now have the pleasure of presenting to you the Governor of Ohio. (Loud and long continued applause.)

REMARKS OF GOVERNOR MYRON T. HERRICK.

Mr. Chairman, Governor Bachelder, Ladies and Gentlemen:

I do not mind telling you the inside facts in regard to this change in the program. Senator Carpenter read me his most excellent address this morning and I was so much impressed with it, and not being prepared myself, I think that he saw at once that I intended to appropriate his speech; therefore, he endeavored to head me off. (Laughter and applause.)

A year ago I had the pleasure of facing you and addressing you, and I see before me many familiar kindly faces that I saw last year.

Much has happened during that eventful year. Much has happened in our homes and our families; much has happened in the great State and our nation. We have been making history during that time.

And this year, as it has been with every year in the advance of our great republic, we meet with a feeling that there has been an advancement, not only in what you so definitely and so exactly represent, but there has been a great advancement in the moral uplifting of mankind, and in the material advancement of our State and nation.

It is a splendid thing, my friends, to be a constituent part of a great nation, that each year, each anniversary, when we citizens gather together we may say to ourselves that we have once more a credit on the right side of the ledger. It is a great thing also to be of a nation in which we as individual members are the individual members of that nation; that we each carry a sense of responsibility of citizenship, and are a part of this great government which is in the great forward march of the nation, taking the lead in civilization, Christianity and in uplifting mankind.

I suppose we here at home, and in this meeting more especially, deal with the material things of life. Of course the success in material advancement only puts us in a position to advance on social and other lines. Therefore, what has been read by your president of the happenings of the year, and of the position of that best of all things in the nation, the foundation from which we build agriculture, indicates that we today may consider the material side well cared for, and that we have greater opportunity for all of those things which go to the uplifting and elevation and betterment and happiness of mankind.

In his able address Senator Carpenter has not touched on one important act of advancement in the year, to which I desire to call your attention, and that is the beginning of a department of good roads, by a law enacted by our legislature, which in its small beginnings—like the creation of any department of our State—means decided progress. Only a short time ago in the nation there was established the agricultural department, and the administration was so fortunate as to find a man peculiarly fitted for that place, both in the establishment of that department, and especially I speak in the installing at the head of that great department of Secretary Wilson, who has so faithfully performed the services, who has been so strong and powerful in his advancement of the great agricultural interests of this State and this nation, that he has been retained by administration after administration without question. It was a splendid movement.

The states throughout the whole country are paying greater and greater attention to these vast interests.

In the enactment of the law for good roads, with which some of you are doubtless familiar, I desire to give you just a few of the details which I have copied from the statutes of Ohio relating to this important department. I will not go into details further than to call your attention to some important points in its provisions.

The State, in the passage on the 18th day of April, 1904, of the act creating the office of State Highway Commissioner, stands firmly committed to the policy of state co-operation in building and improving our public highways. The object and purpose of the State Highway Department is to instruct, assist and co-operate in the construction and improvement of public roads under the direction of the Highway Commissioner, who is a trained civil engineer of large experience in road building, and who shall make a study of the best methods of building roads employed in other parts of the country.

The county commissioners of any county by resolution may direct that any road or any section of road of more than one mile in length, with stated exceptions, be improved; or the owners of at least fifty-one per cent. of the lineal feet along said road may petition the commissioners to improve such road under the act, which petition the commissioners shall grant if such improvement be in the interests of the public. When more roads are applied for than can be completed in the county in a year, first regard shall be given to the most important road and the distribution of the benefits of the policy to all parts of the county.

The township or townships through which the road to be improved runs are required, before the road is approved by the commissioners, to pay twenty-five per cent. of the cost of the improvement. When the road is built or the improvement made, the State Highway Commissioner shall certify the total expense of such construction or improvement to the county commissioners, and to the trustees of the township or townships and the abutting property owners, respectively, designating the amounts to be borne by the State, the county and the township or townships, and the abutting property. One-fourth of such cost or expense is to be borne by the State, and three-fourths shall be a county charge in the first instance, but one-third of such three-fourths, or twenty-five per cent. of the whole shall be paid by the township or townships. This twenty-five per cent. borne by the township is divided, ten per cent. being a charge upon the whole township and fifteen per cent. upon abutting property. The fifteen per cent. to be borne by abutting property is apportioned according to the benefits accruing to the owners thereof by reason of such improvement, notice of course being given of the time and place of such apportionment by the commissioners.

The work is to be paid for as it progresses upon estimates of the engineer in charge of the work, but in all cases twenty per cent. of the cost must be held back until the work is satisfactorily completed.

A county or township availing itself of the provisions of this law and receiving such State aid, shall bind itself to maintain the roads thus improved in good repair for the free use of the public.

The construction and improvement of highways under this act shall be taken up in the order of the receipt of the certified copy of the resolutions of the county commissioners.

The standard width of highway provided for by this act is not less than eight nor more than sixteen feet, except for some special reason of the Highway Commissioner, the width may be greater.

Counties already having roads of the approved standard width and construction are entitled to their proportion of money appropriated under this act, for which the commissioners may make application to the Highway Commissioner before January 1st of each year, when it shall be forwarded to the county treasurer. The commissioners shall then levy on the total tax duplicate a tax sufficient to equal the amount so apportioned the county by the State. Such levy and appropriation then becomes a part of the pike repair fund of the several townships, and shall be apportioned according to the amount of the fund arising in each township, and the township trustees shall apply the fund as other park repair funds are applied.

Some years ago while in New Jersey I looked over what are known as the Telford roads, in order that we might apply that principle to our park system in the city of Cleveland. I then had the opportunity of conversing with some of the farmers in and about Elizabeth, New Jersey. I am not certain about this, but I believe in that road law the farmers bore nearly all the expense. That is my recollection, although as I say I am not certain about it. In any event the farmers were vigorously opposed to the construction of roads under that law because of the heavy tax.

Under our Ohio law, as you will observe, the tax is to be a light one as the work goes forward.

I remember in conversation with the different farmers in that section of New Jersey, a conversation with one in particular, after these roads had been in operation. This was with a farmer who raised hay for the market at Elizabeth. He told me that he had bitterly opposed the construction of the roads and had even organized the people in his neighborhood against the building of these roads on account of the heavy tax. He said the practical result had been that while he hauled his hay to Elizabeth—some miles away—in time of bad roads he could only haul one load a day, but since the construction of the roads he hauled three; and he further said that while he had been taxed, yet his farm was worth so much an acre and "it is now worth double the amount it was at that time, by reason of the crops being of greater value," which was accounted for by the fact that he was able to obtain more on account of obtaining a market at the proper time.

Of course we all appreciate that in Ohio, with a clay soil in many parts of the State, one of the great iniquities has been bad roads in the spring of the year, and especially is this so in the Western Reserve, in the part from which I come. In the villages and cities of the State, at certain times of the year, this creates a demand for farmers' products which at that time can not be promptly delivered, although prices are then higher; and it further results when roads are good of these same products being brought in all together, thus lowering the prices for his crops and securing the farmer the worst of the deal. I, therefore, believe that the good roads problem is one of the most important problems facing the agricultural interests of the State; and it is also of interest to the general public of the State.

The commissioner begins his work next month. He will be free to look over the State and to lay out his plans with the appropriations made, in order that when the next legislature meets an adequate appropriation may be made and this work carried forward and with great energy during all the succeeding years, until we shall have a system of good roads throughout the State of Ohio —which I deem a necessity for the welfare, both material and social, of the people of the State of Ohio. I regard this as a very important question.

In his last great speech at Buffalo, President McKinley said: "Next in advantage to having the thing to sell is to have the conveyance to carry it to the buyer." I have felt that the people of the State have not fully appreciated what it would mean to them to establish this system of good roads throughout the State of Ohio. I am speaking of this somewhat at length because I would like the farmers of the State of Ohio to study this measure with care—the bill that has been enacted. If this measure requires changes those changes should be suggested to the next legislature.

I congratulate you upon the fact that the agricultural interests of the State of Ohio have been given larger appropriations than have been made by any previous legislature. The appropriations that have been made in the interest of agriculture have been wisely used in all instances; so far as I am able to learn in looking over the records, I do not find in any instance where there has been a waste of money appropriated for the advancement of these interests.

You are aware that for each year the expenditures of this great State are rapidly increasing, and increasing because the needs of our great State demand them for the care of those unfortunate people who are a charge upon the State of Ohio. I desire to see those expenditures increase along economical lines, where great benefit is given to the greatest number, but we must not permit the increase of expenditures beyond legitimate sources of revenue and beyond the incomes of the State. We must counsel together and wisely determine upon those things that are most needed; encouraging those branches of agricultural industry which, by the enhancing of the value of our land and of our products, will increase our revenue without a greater burden being imposed upon you in the conduct of your farm, or your factory, or your commercial house, or your bank, wisely living within our income, but endeavoring at all times to increase the value of our farm.

We must not further burden the people of the State of Ohio with taxation, but we must encourage the industries which will enhance their value in order that a revenue may be obtained without a burden.

I noted the other day of the engagement in the State of Iowa, I think it was, of a man at a salary of ten thousand dollars a year, who gave his attention to the one subject of seed corn—of breeding corn. You all realize the importance of this, when it is understood, as you doubtless do, that seventy-three per cent. of all the corn that is raised in the world is raised in the United States, the importance of obtaining the best results from that one crop become plainly apparent.

The conservative statement was made that this scientist, who had given his life to this study, had by reason of his superior knowledge, increased the value of the corn crop of the State of Iowa to the extent of thirty million dollars in a year. I regarded that as most significant, but it is only an index of the value of the product of the soil, and the necessity of encouraging the promotion of that great industry.

I apologize for speaking to you so long, but it has given me a great pleasure to meet you here again today. I assumed when I was asked to come here I was asked more to extend to you a cordial welcome to the capital of the State, and that I do most gladly. I hope you will enjoy your visit here, and I hope I may be able to see you here again next year.

I thank you very kindly. (Loud and long continued applause.)

President Carpenter: Gentlemen, we have with us Governor N. J. Bachelder, of New Hampshire, who will now make a short address. (Loud applause.)

REMARKS OF GOVERNOR N. J. BACHELDER.

Mr. Chairman, Governor Herrick, Ladies and Gentlemen:

While I am not particularly surprised to reach Columbus at this time in time for your meeting, I am somewhat surprised to be called upon for any remarks this morning.

One year ago, as some of you know, it was announced that I would be present at this meeting, and I started, as I supposed, in time for all accidents that were liable to occur, but I only got as far as Cleveland and was obliged to return home, a very much disturbed and disconcerted sort of a fellow.

Soon after I reached home I had a letter from Secretary Miller, who, in his genial and politic way—while he expressed some disappointment that I didn't reach here—made it clear to me that one year from that time was really the time that I was most desired. (Laughter and applause.) This put me so much at ease and made me feel so comfortable that I at once replied that I would accept the invitation and would surely start in time to be here for January 12, 1905. (Applause.) And I am very glad, indeed, to be present; to receive your cordial greetings, and to listen to the earnest, practical address of the excellent Governor of Ohio, to which we have just listened. (Loud applause.)

A person who is a resident of a small state like New Hampshire, when he finds himself in a great state like Ohio, by the side of the good and loyal Governor of that state, and looking into the faces of the intelligent citizens of that great state, for the first time realizes what a small state New Hampshire is. (Laughter.)

On previous occasions of this kind, when I have been called upon to make remarks outside of my own state, I have found same comfort in the remark of the governor of New Hampshire, Governor John Langdon, who was governor just about one hundred years ago. In the opening of the legislature, in making his remarks, he expressed his great inability to perform the duties of the high office to which he had been chosen; he expressed himself as entering upon the duties of the office with a great deal of reluctance; and one of his loyal followers in the legislature, wishing to put the governor at his ease, and not thinking how the remark otherwise applied, said: "Governor, don't be worried; it doesn't require a very great man to govern New Hampshire." (Renewed laughter and applause.) So I have lined up in these great states, beside all your great governors, with some comfort in that remark of the good man in the little state of New Hampshire.

It has been my privilege to visit Ohio before, once during the two years which I occupied the position of governor. I had the pleasure and the honor of attending a farmers' meeting in one section of the state in company with Governor Herrick, and upon that occasion, as upon this, he made a very loyal, earnest address on behalf of the agricultural interests of the State. But what I remember more particularly was a remark which the Governor made to a person whom we met as we were walking to the railway station. It was to a person in the condition in which I presume the citizens of Ohio very seldom get. He evidently had been imbibing too much of the ardent, and he was in rather a hilarious condition. He met Governor Herrick and myself, but he was not so far gone but that he realized which was the capitalist of the company and which of us would probably be able to make the best use of Ohio votes later on, because he addressed Governor Herrick, and asked him to give him two dollars. (Laughter.) Governor Herrick looked at him for a moment, noticed his condition, and said: "What do you want with two dollars?" "Well," he said, "I want to pay my railway fare," to a certain place. Governor Herrick said, "Let me give you, instead of money, a little advice; just stay right where you are; you are in the best place there is in the State of Ohio; you are in the best place there is in any state in this country; just stay right where you are."

That is the thought that has come to my mind a great many times since. It is a statement that I have referred to many times; it is the one thought that I have to express to you here this morning, "Just stay right where you are" and realize that Ohio is just as good a State as there is in the Union. (Loud and continued applause.)

I believe that we spend too much time in grumbling about the weather and grumbling about climatic conditions, grumbling about things that we can not possibly help; and spend too little time in making an effort to improve the conditions which can be changed. And so I say that whether we live in Ohio or New England, or California—wherever we live—let us be content; we are better off to stay where we are than we would be to go anywhere else.

But that need not deter us from exerting a strong effort, an earnest effort, a persistent effort, to improve the conditions in which we live, and to make our home brighter and happier and our business more profitable.

Except to congratulate you upon the great prosperity of the agriculture of Ohio, upon the extended attendance at this meeting this morning, upon the great interest which I see manifested in agriculture here, I have one thought, and only one thought, that I should detain you to express. That is you are located as well as you could be anywhere in this country, yet at the same time you should do everything possible to improve the conditions, to make your business more profitable and your home life more happy.

I thank you. (Loud and long continued applause.)

President Carpenter: Gentlemen, we will now take a recess for five minutes to give an opportunity to those present to meet the Governors.

Thereupon a short recess was taken, and the several hundreds of people present were received by Governors Herrick and Bachelder.

President Carpenter: The meeting will now be in order.

Your Committee on Resolutions will be: Hon. R. O. Hinsdale, of Medina county; Mr. J. W. Crowl, of Champaign county, and Hon. D. L. Sampson, of Hamilton county.

We will next have the report of the treasurer.

ANNUAL FINANCIAL STATEMENT OF THE OHIO STATE BOARD OF AGRICULTURE FOR THE YEAR ENDING DECEMBER 31, 1904.

The following statement presents a complete summary of the financial transactions of the Ohio State Board of Agriculture for the year 1904, with an account of the full financial standing, as shown from the several books and accounts.

Receipts are indicated from the different sources, with balances at the beginning and close of the year. Disbursements are shown for the several accounts, all of which have been by checks and orders signed by the president and secretary, as required by the rules.

The statement also indicates the total estimated value of State Fair grounds and improvements at last annual statement, the cost of improvements made during the year, and the total estimated value at this time, all of which is

Respectfully submitted,

T. L. Calvert,
Treasurer.

RECEIPTS.

Charged to the Treasurer.

MISCELLANEOUS DEPARTMENT SOURCES.

Balance on hand at beginning of year		$15,981 79
From County Farmers' Institutes	$8,373 81	
From fertilizer licenses	13,140 00	
From feed stuff licenses	1,600 00	
From nursery and orchard inspection	225 27	

From sale of horse and phaeton	75 00	
From interest on deposits	448 88	
From sale of barometer	10 00	
From rebate on treasurer's bond	56 25	
		$23,929 21

STATE FAIR GROUNDS—GENERAL ACCOUNT.

From rent of house	$45 00	
From sale of hay	243 93	
From sale of old buildings	391 00	
		$679 93

PROCEEDS OF STATE FAIR 1904.

From sale of full admission tickets	$25,119 50	
From sale of children's tickets	816 00	
From sale of grand stand tickets	2,416 50	
From sale of wagon tickets	38 00	
From night admissions	30 50	
From sale of special tickets	19 00	
From sale of privileges	4,332 84	
From class entrance fees	1,454 80	
From speed entrance fees	2,750 48	
From Ohio Merino sheep breeders—for premiums	130 00	
From Am. Polled Durham Association—for premiums	200 00	
From rent of machinery buildings	190 00	
From fees for care of exhibits—Woman's building	24 00	
From rent of sheep pens	3 00	
From unexpended advertisement fund	13 35	
From collections by Am. Trotting Association	95 00	
		$37,632 97
Total receipts, all sources		$78,223 90

DISBURSEMENTS.

For old outstanding checks redeemed		$40 00
For Farmers' Institute expense	$8,108 00	
For fertilizer inspection and analyses	6,914 45	
For feed stuffs inspection and analyses	480 00	
For general department expense	1,367 48	
		$16,869 93
For improvement, repairs and expense State Fair grounds	$7,772 08	
For material and supplies—State Fair	561 93	
For printing and advertising	3,837 90	
For expense of Fair departments	2,570 84	
For general Fair expense	3,979 77	
For premiums	18,110 83	
For expense of members	1,266 30	
		$38,099 65
Total, as per checks or orders		$55,009 58
From which deduct the outstanding unpaid checks of 1904		17 00
And there is shown actual disbursements		$54,992 58
Which, deducted from the receipts from all sources, shows cash balance on hand		$23,231 32

PROPERTY VALUE.

Estimated value of State Fair grounds and improvements at close of 1903	$957,633 78	
Expended for repairs and improvements during 1904	7,772 08	
Present estimated value		$965,405 86

President Carpenter: The Auditing Committee will next report, Mr. Lybarger, chairman of the committee.

Mr. Lybarger presented the report of his committee as follows:

REPORT OF AUDITING COMMITTEE.

Ohio State Board of Agriculture:

Gentlemen—The auditing committee has performed its duty, and begs leave to report that, after a full examination of the books and accounts pertaining to the financial transactions of the Board for 1904, we attest to their correctness. We made a comparison of vouchers and checks issued in payment, and found all to agree. Receipts from the different sources are correctly set forth, and all expenditures have been properly made, checks and orders issued being signed by the president and secretary, as required by the rules.

Recorded on pages three hundred and ninety-six to three hundred and ninety-nine, inclusive, of this record, will be found a summarized statement of the financial transactions for 1904, as well as the general financial condition and balances available December 31.

Our examination of the records included those with reference to the State appropriations, as well as the check accounts.

We wish to commend the neatness of the accounts and the good order in which the vouchers and checks are filed for examination.

Respectfully submitted,

E. L. Lybarger,
L. P. Bailey,
Auditing Committee.

President Carpenter: Gentlemen, the last work of the meeting before recess will be the nomination of candidates for election as members of the Ohio State Board of Agriculture, two members to be nominated, to fill the vacancies caused by the expiration of the terms of Mr. T. E. Cromley, of Pickaway county, and Mr. T. L. Calvert, of Clark county.

Mr. J. A. Baum, of Pickaway county: In nominating members of this board, there are two things which you should consider—first, ability, and, second, location.

We have a man that we want to place in nomination that has the ability, a man that needs no introduction, a man that is widely known.

He has served on this board in the past to the credit of himself and the agricultural people of the state.

He has been a successful farmer and stock raiser in one of the best, if not the best, agricultural counties in this old Buckeye State. His location is such that it makes him convenient to attend all the agricultural meetings, which each and every member should attend. He is also in touch with our agricultural school, as well as our agricultural state fair.

I nominate Honorable T. E. Cromley, of Pickaway county. (Applause.)

President Carpenter: Mr. Cromley, of Pickaway county, has been placed in nomination.

Are there other nominations?

Mr. J. W. Crowl, of Champaign county: At the request and on behalf of Clark county, I wish to place in nomination Mr. T. L. Calvert, to succeed himself. (Loud applause.)

Mr. A. J. Clark, of Guernsey county: Being one of the representatives of the eastern part of the state, I do want to second the nomination of the Honorable T. E. Cromley. I believe that I can say, with due respect to all the members, knowing him as I do, and as we all know him, he is known in every town and hamlet of the state. He has been one of the most valuable members of this board, and I hope he will be elected by acclamation.

Dr. H. M. Brown, of Highland county: Mr. Chairman: It gives me a great deal of pleasure to endorse Mr. Cromley, whose nomination I arise to second. He has given satisfaction to the people of the state in general.

Speaking from an exhibitor's standpoint, it gives me extreme pleasure to most cordially second the nomination. Having had considerable experience as an exhibitor with this Board and its individual members, it is, I assure you, one of the most pleasant duties that I perform in most heartily seconding his nomination.

Mr. G. G. Grieve, of Greene county: On behalf of the agricultural society of Greene county, I heartily second the nomination of Mr. T. L. Calvert.

President Carpenter: Gentlemen, are there any other nominations? If there are no further nominations this part of the program will close, and the secretary will prepare the ballots to be voted this afternoon.

And thereupon a recess was taken until 2:00 o'clock p. m. of same day.

Thursday Afternoon Session, January 12, 1905.

The meeting was called to order at 2:07 p. m. by President Carpenter, who said: We will now be favored with music by the quartette.

A song, "Water Lilies," was sung by the Cecilian Ladies' Quartette. (Applause.)

President Carpenter: We will now have an address on "Agricultural Education," by Dr. W. O. Thompson, President of The Ohio State University. (Loud and uproarious applause, during which was given one of the O. S. U. yells.)

ADDRESS BY DR. W. O. THOMPSON.

Mr. President, Ladies and Gentlemen:

I appreciate more than you can the welcome that is accorded a man who stands and speaks for agricultural education, and I am very happy to stand in that capacity this afternoon, for I am to give you a rapid view of what I have seen in the matter of agricultural education in the last few weeks, and make some remarks upon what I have seen and perhaps suggest a few comparisons of what you might see if you made an investigation of what is in Ohio. This is made not for the purpose of speaking in any way disparagingly of what we are or what we have, but of suggesting the conditions under which we are living in the hope that we can do something to make them better, for I take it that all are agreed that progress is the watchword of the best citizens of Ohio.

Just this week I have been in Iowa. The earlier weeks I have been in Minnesota and Wisconsin.

There are several types of education in the matter of agriculture, or perhaps we may say there are several methods by which the people are endeavoring to meet the problem of education in agriculture. We in Ohio and in some of the other states, have a four years' course in agriculture. So far as my observation goes the concensus of opinion is that these four-year courses in agriculture ought to be sustained. They ought to be more liberally patronized—in all probabilities will be more liberally patronized in the future.

I do not mean to say by this that any course of agriculture holding for a period of four years is a complete or a final course, but that it will be substantially the same ten years from now that it is now. Not a single college course of any sort in the country has remained stationary for ten years, but there has been no great revolution in these years, so that if you were to compare the four years' course in Iowa, or Minnesota, or in Wisconsin, with that in Ohio, you would find them substantially the same in that regard, for they have all modeled themselves after a general pattern suggested by a study of this matter given by the Association of American Agricultural Colleges and Experiment Stations.

In addition to this four years' course a number of these colleges have tried so-called short courses. At the Ohio State University in this agricultural college we have a short course covering a period of two years. In Iowa they have abandoned that two years' course because they said it stood in the way of the four years' course. In Minnesota they are still maintaining it as they are doing in some other places.

The aim of this two years' course in agriculture in these colleges, generally speaking, is to provide instruction largely in the practical side of agriculture, without so much emphasis upon the academic side of education, in the hope that this two years' course of instruction will largely increase the efficiency of the young man who leaves college at that period to return to the farm.

In some cases these two years' courses have been so adjusted that if a boy got the fever the first or second year, he might go on without much loss of time and complete the four years' course. It has thus served a double purpose—being a kind of a stepping stone to the farm, and a stepping stone to more education, either of which would be good in itself. I don't care to dwell much upon that feature of it because the limited time I am to have would preclude that.

Some considerable agitation has been seen in the agricultural press recently concerning agricultural edcation in Ohio, and that was my reason for taking this theme.

It has appeared in our agricultural papers—and the intimations are there very clearly set forth—that there is something not quite right in the course of instruction. I thoroughly agree with the spirit of this kind of criticism, and moreover I wish to be understood distinctly as welcoming that sort of criticism for the college of agriculture, for we are not wiser, perhaps, than others in our generation. I only want to put this statement forth, that as a result of this criticism we shall try to co-operate, not only with the people who suggest changes, but with all the friends of agricultural education elsewhere, in doing whatever else we can do in order to meet more completely the needs of agricultural education in Ohio.

I am thoroughly persuaded that we are not reaching in Ohio as many young men and young women as ought to be reached and as need to be reached. I am thoroughly persuaded that a great many young men have made a mistake in that regard and have not given the serious attention to agricultural education that they ought to have given to it, and that would have been greatly to their benefit personally and to their profit as producers. I believe, therefore, that we need in Ohio a pretty general shaking up; I believe that we need to have the gospel of agricultural education preached in every school district in this State; that it ought to be announced and thought about and talked about in every farmer's home in this state. I believe there are things that can be done for these boys and girls that will be good for them; that will be good for agriculture in Ohio; that will be good for the cause of education, and that it will be good for civilization itself. There are conditions in Ohio that make me say just these things. Whether we can import from Iowa, or from Wisconsin, or from Minnesota, a system and plant it down in Ohio and give it equal success here is a proposition that I can not quite make sure of. That we can import some of their ideas and adapt them to Ohio needs is to my mind an easier and a clearer proposition.

Let me tell you, therefore, briefly, what I have seen in some of these places.

To go to the extreme northwest, to Minnesota, which has in addition to its four year courses, some short courses. In the four year courses at Minnesota, with a total of over three thousand students, they have less than fifty in their college of agriculture, while we have more than two hundred. That is to say the demand for a four year course in agricultural education is much stronger here than there.

However, they have more than five hundred students now in their school of agriculture, and this school of agriculture corresponds about in its general outline to what might be called an agricultural high school. That is to say they do a very limited amount of academic work; they do a large amount of the so-called practical work in agriculture, and the academic work they do has been adapted as they believe and as I also believe, to the needs of farmer boys.

For illustration, I went into the class of arithmetic. I spent an hour and a half talking with the professor of farm mathematics. A great many people think there is no such thing as farm mathematics; mathematics is mathematics, and that is all there is to it in the minds of some men. But we know full well that there is such a thing as engineering mathematics; we know very well that we teach mathematics to engineers with a totally different purpose from that with which we teach an ordinary student of liberal arts, because mathematics to the engineer is a tool that he uses every day, whereas to the ordinary student of liberal arts it goes in as a disciplinarian study chiefly.

In this matter of farm mathematics there wasn't any text book, and this man has worked one out in manuscript form—a text book for certain problems which he has been trying in the class room—and he found this: If he gave a boy a problem that related to some actual experience upon the farm, by working out these arithmetical problems in farm equations he at once enlisted the interest of that boy, and he made him familiar with the mathematical calculations. For example, if he were hauling manure from the yard he would have given to him a formula and the problem would be to work out just what the actual value was of the load when it was deposited on the field.

They butcher a number of animals that are consumed by the students at the table. They get the weight of these animals as they are on foot; they butcher them, cut them up and weigh them again. The question of percentage is never taught as percentage, but the proportion of dressed beef to the beef on foot is a problem discussed every time. With such questions they are learning percentage in some other name. The professor tells me that they are learning to deal with the problems met upon the farm. It may be a question of a load of wood, a load of dry, hickory wood; how many cubic feet of wood have you on that wagon? How much is there of it? Those are the kinds of problems they take. Of course, a large number of problems in what we call dry measure and liquid measure have been worked out in this book. I do not propose to narrate the whole book; I am only giving these as illustrations, but the whole problem is worked out with reference to the ordinary farm operations.

The experience of those men is to this effect: That that kind of farm mathematics, that kind of arithmetic to a farmer's boy enlists his interest and he never has any trouble in dealing with them. That of itself has been an advantage.

On the other hand, what is the experience when they have girls? The girls take no interest in these problems. The professor says: "I never want another farmer's daughter in my class." The girls do not take any interest in the problems that are of interest to the boy, and they propose to separate the boys and girls.

Agricultural chemistry is taught much in the same way, working out problems that come up in every day farm experience.

They have their shops there in which they teach the boy iron work; how to do the ordinary iron work that is done on the farm. They teach him never to make a chain, but always buy it; but if you break it, always mend it yourself. They teach the repair of ordinary tools on the farm, repairing that will save your time.

They have a shop for wood working where these boys are taught the ordinary operations of wood working, such as you would need on a farm—ordinary repair or the building of an ordinary shed, or the building of a silo, or some such structure. In that connection they have the study of farm mechanics in which they are taught drawing and farm architecture; and they are able to prepare their own plans and to build the buildings on the farm on which they live. In other words, under farm mechanics is included drawing and the general practical problems of the ordinary farm. They insist upon it that these boys should know these things especially. They take a very small amount of academic work, but they undertake to teach the practical things of every day farming.

In connection with this the question of stock judging was a very active question. Minnesota has an experiment station and they have a large force of men there, at the school. They operate the school only for six months of the year, and it is not quite so expensive as it would be to operate six months elsewhere. But they are embarrassed, for if they have a good man it is difficult to expect him to work six months and be idle six months. In the winter they operate the schools and then go back on the farm for six months. They operate during the winter months. It is a difficult problem to secure teachers for so short a term, except at great cost.

That seems to be the idea that has taken possession of the school of agriculture there, and they have succeeded in working out in Minnesota a school of over five hundred. This school does not require any large amount of preparation for entrance; it doesn't pretend to give a degree at the close of it and it doesn't pretend to be a college of agriculture, but it takes the place of the ordinary high school in the education of the young man or the young woman.

Wisconsin has an experiment slightly different. It has a winter course and that course is in operation now. It runs through the winter. They do no academic work, absolutely none. The day that I spent in that school I walked around with Professor Henry, whom many of you know. In that place I found a man with a couple of hogs in a pen lecturing to a group of boys on the hog industry, as a portion of the work in animal husbandry; in another pen I found another man lecturing to a group of boys, using cattle; I went out to another place and here were boys using sheep as their subject; at another place they spent time learning how to splice ropes, and to do the different things that are of convenience and necessity on a farm. Here also they had their shops for iron work and wood work. Everything at the Wisconsin school is practical, so-called as distinguished from the academic. They have about five hundred in that school right now going on in this course of agriculture; they gather up from the state of Wisconsin a large number of young men.

They, too, have found a very small percentage of their students in the college of agriculture. They are not graduating very many men with what me may term the scientific attainments in agriculture.

Now, in Iowa, they have abandoned their two year courses and they have an unique thing in agricultural education, different from that which I found anywhere else. They have a two weeks' course in agriculture every winter and it is in practice and closes Friday of this week. They began last week—Monday.

In this two weeks' course they confine themselves to two things—one is animal husbandry and the other is corn judging. They expect to add the element dairying; they are doing a little work this year, elementary.

They have a stock pavilion in two stories. The upper story is given over to the corn judging and the lower story to cattle. They start those people at eight o'clock in the morning, in sections. In the corn judging room, for example there were about two hundred and fifty men at work when I was present, and in the stock room below about the same number. At ten o'clock the people upstairs go down and the people down stairs go up, and those upstairs study corn judging for two hours and those down stairs study the cattle, and they turn it around in the afternoon and do the same thing.

The persons who come for the second year are taken off in a second year class, and confine themselves to the study of these things.

They make absolutely no effort to give academic instruction, but undertake to teach the practical things.

You have heard of the experience of Iowa, for example, in her seed corn experiments. There have been some spectacular movements there, and tomorrow a train on the Burlington road will start through Illinois with Professor Davenport and Professor Henry on board, and will spend tomorrow and Saturday in Illinois; Monday they go to Missouri, on the Burlington, and then they go to and through Iowa. This train is furnished by the Burlington road, all expenses paid by the company; they simply go along with the train and do their lecturing. The railroad company doesn't pay them any salary, but it furnishes free transportation, so that there is no expense.

The Burlington has gone into that business simply because it pays, and the farmers of Illinois, Missouri and Iowa are to be posted up on the question of seed corn by the Burlington special which will travel over those states.

At this two weeks' course in Iowa, for the study of seed corn and live stock, I may say to this audience that in looking over that group of men I was quite surprised at the youthfulness of all the men. The most of those men were from twenty-two to thirty-five years of age. I went around in the corn judging room for an hour and a half, meeting every man I could, and asking him a series of questions like this: "What is your name?" and he would tell me; "What county are you from?" and he would tell me; "Well, how old are you?" and he would say; "Are you a farmer?" and he would answer; "Are you working for yourself?" "Yes" or "No," or perhaps working for his father; "Have you your own outfit?" and he would answer, "I haven't" or "I own my own outfit," as the case might be; "Well, what brought you to this school?" and he would answer in some instances that he was at a county fair where they were judging corn and the prize winners were given a scholarship and "I won that, and I am here." "Do you expect to go back on your farm and stay there?" "Yes." "Do you expect to farm all your life?" "Yes." "Farming is your business for good?" "Yes." "You are here to improve yourself as a farmer?" "That is what I am here for."

I was surprised to find practically five hundred young men farmers there, and when I come to compare with this audience I find you are older than they were by quite a good deal. There seems to be a very large percentage of young men in Iowa that are on the farm who are interested in agricultural education, whereas here the men who are most profoundly interested are the older group of men, and it seems as if we had failed to get hold of the young men.

Conditions in agriculture are not the same here as there. I made some inquiries about that. I find out in Sac county, where I lived from 1882 to 1885, land has gone up greatly in value, and the farmers of eastern Iowa have moved out there and bought; I find a great many of these young men at Ames were working on their farms. I know some farmers who do not live more than fifty miles from Columbus—know one who owns more than one thousand acres, and he has never given his son a foot of land, and I wondered if the conditions were the same here as there. It seems to me that those young fellows had gotten hold of the business.

In the matter of the audience there was one man fifty-nine years old, and that was the only man who showed any signs of age. He was there and he willingly confessed he was fifty-nine, and he had his sons there with him.

Then I found another man who was said to be the man who sold to Mr. Bradfute some prize winners. He is the wealthiest man in his county—a large stock dealer—and he said: "I had no idea that there was the question in seed corn there is, and I am here to get out of it what I can." In other words, here was a wealthy man who was rich enough to go on comfortably, and yet had the spirit in him to study this problem of ordinary farm crop.

I can not tell you all the little ins and outs of that visit there, but I found in that two weeks' experiment there a gathering of more than five hundred. They said to me that today and tomorrow there would probably be over a thousand farmers at the Iowa State College of Agriculture and Mechanical Arts for the conventions which are held; that that was about the attendance of last year. In other words during this week they will have more than fifteen hundred farmers, young and old, all bent on the discussion of such problems as you are discussing here.

Again, McLaughlin Brothers, of Columbus, ship their horses out to Ames and keep them there for no other purpose than to exhibit them. They are very glad to do it. That is to say, the interest in that matter has been so thoroughly aroused in the community that the State College of Agriculture is the center where all these interests gather.

I do no say that is the best thing that can be done, but I say that is a pretty good thing in itself. I think they made a mistake in abandoning their two years' short course in agriculture, because they can not attempt in these two weeks to do what ought to be done for a great many people.

The winter course at Wisconsin, where Professor Henry is in charge, seems to me to do something more extended, more definite for the boys that are there than possibly can be accomplished at Iowa, but he can not stir up any more enthusiasm; he can not arouse more interest than is aroused in Iowa.

I think it would be well worth your while to give a minute more. The means of these schools for doing the work is not an uninteresting problem. I personally think that Iowa has gone to excess in the work. I do not say this in a spirit of criticism, but it seems to me they have expended more money than need be.

They are putting three hundred and seventy-five thousand dollars into a main building for that college of agriculture; two hundred and twenty thousand dollars for the college of engineering—engineering hall; two hundred and fifty thousand dollars in the agriculture hall; about sixty thousand dollars into a dairy building; and they say the money will not complete it. They have put about thirty thousand dollars into their farm barn and their pavilion for the study of animal husbandry and corn judging and the like. That is to say, in round numbers the Iowa State College, when the buildings are completed which are in process of erection, will have a million of dollars in buildings.

They now have eight hundred acres of land and are buying two hundred acres more so that they will have a thousand acres there with a million dollars in buildings on it, and they are planning now some other buildings for the further work of that college. About seven hundred of their students are students in engineering and in general science, and about five hundred are students in agriculture in the four years' course and other courses together. This course, of course, does not include the men and women who come to the short course, the two weeks in the winter time. That is a unique thing; there is nothing like it anywhere else in the country so far as I know.

The experiment of Wisconsin is a unique thing; the school of agriculture at Minnesota is another experiment.

But to return to Minnesota for a moment. They have done some things in Minnesota of interest. Menominee is one of the most interesting places I visited. They have at Menominee a good start with a county school of agriculture, the county training school for teachers, the Stout Manual Training School. Senator Stout gave the money for that Manual Training School, and he has given a good deal of money that nobody knows anything about.

The county school of agriculture and the county school for the training of teachers occupies the same building, same property, in the town of Menominee. They have a property investment of about thirty thousand dollars, and ten thousand dollars which Senator Stout gave, making the total investment forty thousand dollars. On a small piece of land they have one building which has a basement and two stories, the training school for teachers in the upper rooms, while the down stairs and the basement are used for class rooms in agriculture. Outside of that they have a building used for dairy purposes and one for a gymnasium, and a power plant yet to be put in. They have shops for wood working and iron working. The girls and boys on the farm are given training in agriculture. They have a limit of about one hundred and twenty-five students and they are pretty well up about that limit now in the county school. The running expenses are six thousand dollars, of which the state pays two-thirds and the county one-third. So that the state of Wisconsin has undertaken to back not only its State University and Experiment Station, but it is paying two-thirds of the running expenses of these county schools, and also is making appropriations for the erection of buildings.

That is a new experiment, and up to date it has seemed to be very successful. I was greatly interested in what I saw.

A young man who was a graduate of college and who had been given his degree in agriculture was in charge. He and his wife were both teaching in the school.

The upper story was a county training school for teachers in which they gave a rapid review of the common branches. Persons who entered that must have been graduates from the county schools, corresponding to our Boxwell or Patterson graduates. They gave them, as I say, a rapid review of the common branches, a little instruction in the methods of teaching and some allied subjects, and they certificated them for district schools only. I was told, for example, that all the teachers had gone back, except two who were unfortunate enough to get married. (Laughter.)

That is to say they have certified them to the county, for the district schools. You know in this state we talked about normals for supplying teachers. Well, these normal schools are not keeping the district schools in teachers. A graduate thinks he is worth too much money to go back to the district, and you can't get him or get her to go. So Wisconsin found, with her state normal schools, nobody to go into the district school. They have proposed these county schools to come in and make provision for the country district teacher, and for the boy in agriculture who could not get away to the state school, to the State University, and who could spend but a little time. They meet it in that way.

Minnesota has suggested the practicability of providing for some local schools. We, here in Ohio, have been thinking that we ought to do something for agricultural education in the local school. The school conditions in Ohio are entirely different from what they are in Minnesota or Wisconsin. Those states have large and extended areas of level, black prairie land which is marked out like a checker board, and which is an agriculture different from that of Ohio. I think they have gone wild, insane, on land. In Iowa and all that part of the country they ask one hundred and twenty-five to one hundred and fifty dollars an acre for land. The Ohio State University has received the Henry Folsom Page land, and we are selling our land in Champaign county, Illinois, on an average of one hundred and twenty-five dollars an acre. That land is not one whit better than very much land in Ohio, in fact, it may be weaker land in the end, but they put a high value on their land. Our lands in this state are much cheaper and I believe just as valuable.

Those people believe absolutely, without any question, that agricultural education keeps up the value of their farm land; they believe that if you could keep agricultural education going there would be an appreciation; there would be the educated farmer who would operate it intelligently; who would operate it successfully and make efficient farmers.

Those people said to me: "We are going back to Ohio," and they may come back, and I expect to go with them on an investigation. They say: "Dr. Thompson, your land back there is not worth so much, farther east," and more likely that is true. "We think you made a mistake in not putting agriculture into your local communities. We think if you had more agricultural education your farms would be more valuable."

I don't say so; I simply throw out the remark for you to consider. I have an opinion which I need not now express, but I tell you what they think of us.

We have a great variety of farming that they do not have in Iowa, and never can have. The problems of the Ohio farmer are very different from the problems of the Minnesota or the Wisconsin or even the Iowa or Illinois farmer. It seems to me, therefore, that we ought to set ourselves about it to discover if something can not be done to make agricultural education come closer to the homes and the hills and the valleys of Ohio, a little closer to the boys and girls, and do something that will make them the bulwark of our agricultural life.

It has sometimes been said, you know—and I think you feel that way about it if you appear before the members of the legislature, as my friend Smith knows—that "education is the burden of civilization," and hold up their hands and say: "Why, it takes so many millions of dollars to educate in the day schools," and they hold that education is the great burden we have to carry. I think that is absolutely false and wrong. My statement of it is this that "Civilization is the burden that education has to carry;" that the schools are the foundation on which these things are to be perpetuated. We can not maintain the value of agriculure in Ohio if we allow our intelligence to decline; we can not go back to the old simpler methods of farming and succeed. We have got to go still higher; we have got to get to the bottom of this matter, to teach our boys and girls on the farm that education fits them for farming, and then the farmer will be more intelligent, more efficient, more successful from every point of view. (Applause.)

I am only prepared to say this much for the college of agriculture of the Ohio State University and its friends—and if it has any foes, its foes as well. I think every honest man who has the interest of the state of Ohio at heart ought to see to it that something is done that will make agricultural education more and more efficient in this great state of ours.

I think I know whereof I speak when I say that the tendency of Ohio has been too much away from the farm; I think that we grow too many politicians and too few farmers. (Great applause.) I mean to say by that that too many of the boys on the farm have got the fever of getting away from it, under the notion that another life would be more metropolitan, more honorable, more satisfactory. I want the condition of things to be that a man may live on the farm and still know other people regard him as a typical citizen and the real gentleman. (Loud applause.)

But, now, I have not said anything about the women, and they ought to have consideration here I assure you, for the women have more interest in this problem; I think there are statistics to prove that the women have had the laboring oar too much, and I was much pleased, for example, at what I saw in Iowa.

There was a considerable number of women at this two weeks' course. I could not go around and ask them who they were, and how old they were (laughter), but they were there. One woman came up and talked to me, a young wife who looked as if she might be twenty-three or twenty-four. She was there as a young wife, interested in the problems of domestic science. I saw a woman there who made me think of my own mother; she was there in the front seat listening to a professor lecturing on some question of adulteration in materials handled in the ordinary household. There was a great variety of women and I found they came from all over the state as well.

Those women have the idea that something can be done in the matter of the education of women who are going to live at home, and I think they have the right idea.

We have a college of domestic science connected with our college of agriculture. No reason why it should be connected with the college of agriculture, because it is domestic science and there are homes that are not farmers' homes, so I should not like to treat the relation there too closely, too severely.

Domestic science needs your help and your co-operation. There are a great many women, young women, who are making the mistakes of their lives in going after education that will be of no great service to them, when there is a better type of it here.

I do not want to be misunderstood, but if your daughter wants to teach in the next ten years the course in domestic science will do more for her than the course of liberal arts will do. That is to say, I could next June get more money for the graduate of the college of domestic science as a teacher than I could of any graduate of the liberal arts as a teacher. That is simply a business proposition.

The course in domestic science has to do with that greatest of fundamental problems, chemistry. Chemistry is the most fundamental, unless there might be a dispute about physics and chemistry. Chemistry is really the whole problem of the course.

As time goes on the problem will be to get down into our schools some conception of domestic science, some conception of agriculture, some conception of manual training in its elemental form that will arouse in our country schools the same kind of spirit that we are trying to arouse in our city schools. I believe that the possibilities are there. I believe that they ought to be realized, and I am firmly of the opinion that the last word in the cause of education has not been said in Ohio.

I am impressed with this phase of it when I see what Wisconsin has done. I believe we have gone along in a loose method about long enough, if not twenty-five years too long; that the people of Ohio ought not to allow their legislatures to vote money without knowing that they are going to use the money for the things that ought to be done.

I know that college presidents are men who are agitating before legislatures for money. We want the earth; we want a clear title, and we want the liberty to do as we please with the money, but I think if you would pin the money down, and pin down your boards of education into doing the things that ought to be done, and insist upon men and women going to these boards with the intelligent idea that education is to prepare boys and girls to live, we would do a large service in this matter, and agricultural education is simply one of these.

But, Mr. Chairman, I would go on forever, if permitted. There is a limit, and this matter must come to an end.

You come up and see me sometime and I will talk to you until late bed time about it and will tell you more than I can possibly this afternoon. (Loud and long continued applause.)

President Carpenter: We will now have a song by the Ladies' Quartette.

A song, "The Last Rose of Summer," sung by the Cecilian Ladies' Quartette. (Applause.)

President Carpenter: The subject, "Rural Development," will now be discussed by Governor N. J. Bachelder, of New Hampshire. (Loud applause.)

ADDRESS BY GOVERNOR N. J. BACHELDER.

Mr. Chairman, Ladies and Gentlemen:

When in my own state I exercise all the authority and appropriate all the honor that goes with the title under which I have just been introduced, but when outside of my state it makes me feel particularly embarrassed to be introduced as the governor of the state, especially to an audience of farmers, because I think the idea quite generally prevails that a person who has been chosen to the office of governor, even of a small state, is a little wiser, is a little better; has a little more knowledge upon all subjects than the ordinary layman. However as that may generally be, it does not occur in my case, and I like to appear before you this afternoon as a plain, practical New Hampshire farmer, to try and solve some of the troubles, some of the problems which you are engaged in solving in such gatherings as this.

I live upon one of the most desirable farms in New Hampshire, a farm that has been in the family name since it was taken up from the wilderness. I have never had any occupation except that of farming, except in connection with the public duties which my efforts for the farmers have brought me into, and I look forward to no occupation or profession save to go back upon my farm and try to earn an honest living in tilling the soil. I regard this as one of the most enjoyable occupations that can come to man, so what I say to you this afternoon—very brief as it will be—I desire you to consider as coming from a practical farmer, the same as yourselves, and from one who thinks as much of his farm as any person present does of his own.

What I say will be along the line of the thought that I briefly suggested this morning, that of making the most of our opportunities, and making the most earnest efforts to improve our conditions.

I am sure that I would have been glad had the previous speaker continued and occupied the time that has been allotted to me.

It has been my privilege to listen to addresses upon that subject—agricultural education—many times in several different states, but I am sure that I only speak the feelings of the many when I say that I never heard that subject discussed so clearly, so convincingly, so successfully and so practically as it was discussed to us by Doctor Thompson this afternoon (applause), and I regret that the time was not given him to continue that discussion.

I shall do what I very seldom do, and that is read from manuscript the things that I desire to say to you. I did not like to come this distance and in the time which was allotted me, fail to say exactly the things that I intended to say, or say things that I did not intend to say. As I said a moment ago, it is along the same line of thought of the short talk of this morning.

Make the most of our conditions; be satisfied with the place where we live; whether it be in the east or the west, or the south or the north, doesn't make so much difference about our success in life as the effort we put forth ourselves. Be of the opinion that we are properly located, in as good a place as we would be anywhere else for the work which we have in hand.

You have heard of the experience which a board of public officials once had in locating a cemetery near a large city and, after they succeeded in locating it and had the fence built and the entrance erected, they tried to determine what inscription they should put up over the entrance to that cemetery. They were successful business men, but they were not sufficiently familiar with the Bible to think of any inscription that would be appropriate. They talked it over; one suggested the word "Welcome" (laughter), but they concluded that was not just the proper inscription; another suggested something else. Finally the Irishman—who frequently comes in with the right thing—arose and said he had the proper inscription to put there: "We are here to stay." (Laughter and applause.)

So I would like to have our farmers generally consider the fact that "We are here to stay," and it is our duty to make the best of the conditions which are around us.

It affords me peculiar pleasure to come to Ohio and meet the progressive and successful farmers of this great agricultural state. I assure you I have not come to the capital city of your state to discuss state affairs, for the prominence taken by citizens of Ohio in national affairs indicates your ability to produce men capable of governing their own state and other states as well. I have not come into the shade of the great Ohio State University to discuss any phase of agricultural science or to give instruction in technical agriculture. for when we in New Hampshire are in need of a president for our agricultural college, or a professor in any of its departments, we search for them faithfully, but finally engage graduates of your university and have never yet been disappointed in their ability or the result of their work. I have not come here to tell you how to grow crops, how to feed stock, or how to manage your farms to the best advantage, for it would be presumptuous for a New Hampshire farmer to attempt to do this in close proximity to the greatest agricultural fair held in the world. These are some of the things I have not come here to do.

Agriculture is the great basic industry of the country, using more capital and giving employment to more people than any other industry. The magnitude of the industry, however, does not indicate its relative importance, for it is the industry upon the prosperity of which the prosperity of all other industries depends. This fact is established by action taken by the congress of the United States and by state legislatures in supporting agricultural colleges, experiment stations, boards of agriculture, horticultural and dairy associations, not primarily for the benefit of farmers, but for the benefit that will accrue to all the people from the prosperity of agriculture. While we give due credit to national and state policies that have prevailed and contributed to the general prosperity of the country now enjoyed, we should not forget that the abundant harvests of recent years have had much to do in creating the favorable conditions that we see on every hand. The person who aspires to statesmanship in state or nation will find the greatest opportunity for the exercise of patriotism by promoting the great fundamental industry of agriculture and the various public utilities that contribute to the welfare of the rural people. While we recognize the importance of other industries and the interests of people engaged in manufacturing, transportation and commerce, around which have developed great centres of wealth and population, we recognize agriculture as the basis and in no sense to be compared with them in the way of public support and public protection. These preliminary remarks may seem uncalled for in a great agricultural state like Ohio, and yet they express truths that cannot be too frequently stated, or too emphatically expressed.

I wish to call your attention first to what might be called the new agriculture. This new agriculture began with the establishment of agricultural colleges and experiment stations, the study of soils and plant growth and the establishment of an agricultural science. Text books upon agriculture were prepared and men were trained to instruct in the science. Organizations and societies were formed for diffusing knowledge and stimulating an interest in this industry. The isolation of farm life was broken up by the establishment of social agencies. Through these and other means the farmer's opportunity for and necessity of mental exercise and development has become as great as that in any other industry or any profession, and the tillers of the soil may now take their proper place in public affairs and may soon place their industry where it belongs as the first in the land.

In order to do this we must be active, earnest and persistent. When we have equipped ourselves to manage our own farms in an intelligent and up-to-date manner we are in position to exert an influence for agriculture in a broader field, and when we have placed our agricultural institutions and organizations in line with our work we have afforded a means of recruiting our ranks with valuable assistants. When we have become as active and as jealous of our rights in matters of legislation, both state and national, as those engaged in other industries are of their rights, we will have commanded not only the sympathy, but the respect of people in general. Instead of abusing others for looking after their interests we should devote the time to looking after our own interests which we have neglected in the past. We need leaders in agricultural thought and influence to meet the leaders in other industries.

The new agriculture demands scientific knowledge in the manipulation of soils and the growing of crops; the use of improved machinery and the sources of fertilization; the intelligent rotation of crops and the demands of the local markets; the management of public affairs in the town, county, state and nation, and proper conduct in society. In fact, it demands men of developed mind and strength of character corresponding to the comprehensive scope of the industry. It offers in return for these a life of health and happiness not found in any other occupation or profession in the world. When a person has become so interested in his farm by thorough study of it as to watch his growing crops and farm animals with feelings of intense enjoyment, and walk over his verdant fields with a feeling of higher pleasure than he would find on the costly carpets of a Waldorf-Astoria, he is in position to know something of the pleasures of the true husbandman. In order to secure these results we must send more young men to our agricultural college to study agriculture; we must keep our agricultural organizations upon a high plane, above personal prejudices and from excessive social frivolities, and by precept and example create a vigorous sentiment for agriculture. We must enter upon our work with the earnestness, intelligence and sincerity that can only be obtained by a thorough knowledge of it in all details.

Among the important matters of a public nature bearing upon rural development and the promotion of the new agriculture is the construction of highways corresponding to the progress made in other directions. The houses in which we live, the carriages and cars in which we ride and the churches in which we worship have become costly palaces compared with those used by our ancestors for similar purposes. Our business blocks and our hotels are models of comfort and luxury. The clothes worn, the food eaten and the newspapers read are beyond the imagination of the people who occupied our places a generation or two ago. When we consider the most important matter of all—the roads over which all the people travel—we find no such general advancement, and are forced to the conclusion that the purse-strings of individuals have been loosened for individual luxuries faster than the purse-strings of the public treasuries for public conveniences in the matter of roads.

We are of the opinion that the movement to secure national aid for the construction of highways is equitable and right. The people most interested in better roads are those engaged in tilling the soil, comprising about one-third of our population. The farmers of the country have by energy and industry placed upon the markets of the world such volume of the products of the soil as to affect the balance of trade with foreign countries, making us a selling instead of a buying nation. They have responded nobly to every call issued in the name of their state or nation. When the military or naval forces have needed recruits the farmers have sent to the ranks their most vigorous sons, many of whom fell in the bloody conflict upon the battlefield. They have contributed their full share to the national government in its adjustment of claims resulting from war, and in its liberal policy for the development of the country. They have through their influence and support aided movements for the development of the various industries within the states. They never fail to regard their state and nation with feelings of patriotism and love of country unexcelled among professional and industrial people. In view of these and other facts that might be stated, they now ask in the name of justice that the roads upon which we all travel shall be improved. Before the surplus now held by the national government is distributed to national banks without interest, or the erection of expensive government buildings in cities, which has become a fixed policy of the government, proceeds further, the thirty million people of the country engaged in rural pursuits demand a recognition of their rights in the improvement of highways by national patronage.

A matter of even more practical application than that of roads is the practice of progressive, up-to-date agriculture. We refer especially to improved methods in farming and to supplying the demands of local markets with perishable products. It frequently happens that one acre devoted to such crops, intelligently handled, yields a larger gross income and possibly a larger net income than the average farm. We may well resent all sneers at small farming when the net income from one acre of fruit has been more than the net income from twenty acres of corn. We have heard of an instance where the net income from one car of vegetables was greater than the net income from one hundred acres of wheat, and where the net income from a greenhouse covering one-fourth acre of land was greater than the net income from the average one hundred and sixty acre farm. We know an instance where a little girl received three hundred dollars in a single season from a patch of sweet peas grown in the garden, and where a boy received four hundred dollars in a summer for fir balsam pillows gathered in his father's forest. We do not refer to these things as reflecting in any degree upon the management of the splendid corn and wheat farms of Ohio, but for the purpose of calling attention to the opportunities for profit in some of the lines of farming that changed conditions have made possible, and to the fact that the opportunity for profitable agriculture is no longer limited to the production of staple crops that must seek a distant market.

Rural development is somewhat dependent upon the efficiency of rural schools, and this demands earnest attention. The boy or girl living in a sparsely settled community with but little taxable property compared with conditions in cities, should not be dependent for school privileges upon the revenue from such property. Public education is a public function for the benefit that the reflex action of such education has upon the welfare of the state and nation, rather than for the benefit of the child educated. If it were not so, by what right do we tax the childless bachelor for the education of his neighbor's children? There is no valid reason why the country boy and girl should not have as good school advantages as the boy and girl in cities. They may be obliged to travel farther to the school, and the schoolhouse may be a less expensive one, but the strength of school and quality of instruction given should be the same in both instances. This calls for state aid in some form for rural schools and better trained and better paid teachers. This is in the line of development in all affairs. The centralization of manufacturing in great combinations results in equalizing the profit to the advantage of the smaller concerns in the combination. Great transportation companies spend more money than is received on insignificant lines of their systems and the United States is spending money for the development of its recently acquired possessions in the far East that does not yet come from them. The equalization of school privileges is in accord with the general trend of affairs and should be given earnest attention.

The recommendation of the postoffice department in the recent report for the establishment of a local parcel post indicates that the vigorous agitation of the subject carried on by various organizations for years is beginning to attract the attention of those in authority. While it is true that the recommendation applies only to local rural delivery routes, it is a recognition of the principle that has never been accorded us before by the postoffice department. It is made upon the basis that the load of the rural carrier can be increased several times without becoming burdensome, as he is required to use a conveyance of some kind entirely beyond the requirements of the present mail demands. On such matter the postoffice department recommends a rate of three cents per pound with a maximum weight limit of five pounds. The Postal Progress League recommends the following rates for such service:

8-ounce parcels	1 cent.
1-pound parcels	2 cents.
11-pound parcels	5 cents.
30-pound parcels (½ bushel)	10 cents.
50-pound parcels (1 bushel)	15 cents.
100-pound parcels (½ barrel)	20 cents.
200-pound parcels (1 barrel)	25 cents.

It is not probable that the rural carriers could transport freight under these conditions, and it is equally probable that the maximum limit recommended by the postoffice department could be increased without detriment to the service and to the convenience of the patrons. Somewhere between these recommendations will be found the happy medium and a rural parcel post will be established. This will pave the way for a general parcel post which has been already established in all the leading countries of Europe. The usual weight limit is eleven pounds and the rate fixed according to the distance. In Germany, Austria, Switzerland, Great Britain, Italy, Hungary and other important countries it is a recognized feature of the permanent postal service, and there is no reason why it should not become a permanent feature of our postal service. It is based upon the same principle as the extension of transportation and educational facilities. The parcel post should not be demanded out of antagonism to any existing means of service, neither should we neglect to demand it if just and right, regardless of the effect it may have upon any existing agencies engaged in such service. It is a matter having special application to rural development.

Another means of development that relates to people engaged in other industries as well as to the farmers, and one not new to the farmers of Ohio, is the election of United States Senators by direct vote of the people. No matter of public concern has made such progress in public sentiment in recent years as has this matter. And it is not strange when we note occurrences in the selection of men for the United States Senate that transpire around us. A case in point is the recently reported conference of three men in the great state of New York, at the close of which it was announced that the election of a certain candidate had been definitely settled, and we have yet to see an intimation in the press anywhere that the matter was not as definitely settled as though the election had actually taken place. The same thing occurs in other states, although not often made as public as in this instance. If this is "a government of the people, for the people and by the people" let them have an opportunity to exercise that function in the selection of men to represent them in the highest law-making body in the land. Legislatures that are chosen to elect a person to the United States Senate, instead of being chosen to deal with state issues, are less liable to be qualified to serve a state well. Delegate the power to elect senators to the people where it justly belongs, and we will have less politics and more statesmanship manifested by our state legislatures in dealing with state affairs. This is a matter of prime concern to rural people in addition to the possible benefit that might be derived from having a voice in the selection of men for the senate.

Still another means of importance in rural development in Ohio that is in operation throughout the country, but which has been so successful here as to attract national attention, is the social, educational and fraternal organization, known as the Grange. Its introduction in the country thirty-seven years ago was met with antagonism and derision of many intelligent and influential people, but so well has it kept within its legitimate sphere, and so loyally has it stood by the interests of the rural people that it now receives the commendation of all intelligent persons in the least degree conversant with its work and policy. Any mention of rural development would be incomplete without recognition of this organization and due credit for its grand work, as well as its boundless possibilities for the welfare of the people and of the state.

During the past two years I have been in position to take a comprehensive view of the affairs of my state and become somewhat familiar with the agencies at work for promoting the interests of people engaged in various industries and professions. That experience has added to, rather than detracted from, my previous high opinion of this organization as a great uplifting force for agriculture and for the people in general.

There is a matter that I desire to speak of that I did not include in my written remarks. I think there is at the present time more interest in establishing the teaching of agriculture or nature studies in the public schools. We, as farmers, are too apt to give too much attention to things that produce immediate results and too little attention to things, the results of which come in the future. We give more attention to the cultivation of our crops, of our corn and our wheat, to the value that it will bring in the market, than to the condition of the land a few years hence.

We give more attention in the education of our children—but I do not presume to discuss the subject of education in this distinguished presence, only to call attention to one or two things. We give too much attention, relatively to those matters of education in our children which produce immediate results and too little to those which may show results in the future.

To illustrate my meaning, I would have the people, whether they are farmers or whatever their occupation, when they travel past a forest, see something in that forest besides the number of cords of wood and the number of thousand feet of lumber; I would have them see in that forest something of the result of the agencies existing in the atmosphere and the soil, which produce that forest.

When they travel past a field of corn or a field of wheat, I would have them not only consider the value of that corn and that wheat in the market, but I would have them consider the processes taken by the atmosphere and the elements of the soil, together with cultivation and fertilization, to produce that splendid crop.

I would have one when traveling and seeing rocks, granite ledges, not consider them as so many rocks or so much granite ledge, worth so much money, but have them consider intuitively, almost, the composition of those rocks or the composition of that granite ledge. These things can, I believe, be brought about by teaching our boys and girls.

It was my pleasure a few days ago to be walking in company with two gentlemen, and we were passing through a very rocky section, and one gentleman spoke of the rocks that were on the side of the road; the other gentleman went and picked up a rock and spoke of what it was composed, of granite, of quartz, and of other rocks, and he was enabled to do this because he had given some study to that in his younger days; and it seemed to me how much brighter and fuller and richer that man's life was than the other's who simply knew that as a heap of rocks.

In my boyhood days I became intensely interested in the study of birds, and about forty years ago I made a collection of birds' eggs, which is upon my desk at home today, and so intensely interested was I in that subject that I can almost remember now, from what part of the farm or from what part of the town I got the eggs of the different species. And when I see a bird now I do not simply think of it as a thrush or a wren or a robin or a sparrow, but intuitively, from the study which I made of that subject, there comes to my mind the useful qualities of that bird, and the opposite qualities, if it has any; and I enjoy it the more from the knowledge which I have gained.

If our boys and our girls in our public schools can be taught some of these things about the trees, and the rocks which they pass every day in the road, about the forests, and the crops, about the birds which fly through the air, and at the same time obtain mental development, why isn't it just as well as for them to obtain that mental development by committing to memory the heights of the different peaks in the Rocky Mountains or trying to pronounce some of the unpronounceable names of foreign capitals? (Loud applause.)

In closing permit me to say that I recognize the fact that you have other important interests besides agriculture and other sections besides rural sections, but unless you manifest a determined interest in promoting and protecting your industry and the interests of rural sections there will be none to lead in the matter. People representing other industries and other localities are active in their behalf. We should not aim to pull them down in legitimate effort, but should aim to build up our industry by every legitimate effort within our power. While we hail with delight the advent of the rural mail carrier, the rural telephone and the improved means of conveyance to and from the rural districts of the state, we should constantly strive to improve the roads, promote knowledge and skill in agriculture, improve the rural schools, establish the parcel post, have a voice in the election of senators, and build up the Grange, to the end that the rural sections in which we live and where we rear our families may be as prosperous, as influential and as enjoyable as our public rights allow and our energy and loyalty to our industry is able to secure.

President Carpenter: We will now be entertained by a discussion on "Certain Phases of Orchard Management," by Professor John Craig, of Cornell University, of Ithaca, New York. (Applause.)

ADDRESS BY PROFESSOR JOHN CRAIG.

Mr. President and Ladies and Gentlemen:

This, to me, is a very auspicious moment in my lecturing experience. The opportunity of meeting such an eminent body of agriculturists and the privilege of hearing such a distinguished series of addresses, is rare in the experience of a teacher of technical agriculture or horticulture. Especially do I prize the experience, and I may add that I am profoundly impressed by the strength and character of this audience. I am much impressed by the personnel of the speakers which you have attracted, and the quality of the speeches they have made.

It seems to me that you have had a magnificent display of talent. In President Thompson's address you have had an address which represents the intellectual development of agriculture; in Governor Bachelder's address you have one which reflects the social and material side of the avocation in which you are interested; while from Governor Herrick's address of this morning, we learn that he would guide the car of progress as speedily as possible along and over the highways of agricultural development, keeping, however, the question of cost in mind, and ever a watchful eye upon the throttle valve of economy.

Why are these speakers present? Why are these hearers present? It seems to be because you and the speakers are interested in a common cause, and your common interest qualifies the man who occupies the position on the rostrum, and qualifies the person who sits in the audience, to be present at this gathering. There is the necessary qualification of self interest and of public interest. These are the most potent of all qualifications.

Some little time ago I had the pleasure of listening to a very inspiring and instructive address by Governor Taft, late of the Philippines, now Secretary of War. To illustrate some point in his address he told this little anecdote:

Irishmen, you know, furnish the material for a great many of our stories, and on one occasion there was a wedding or a wake—I am not sure which—and out of it grew some little difficulty, which resulted in one of the men getting a broken head—a not unusual happening, I understand, in some sections on such occasions.

The man who inflicted the injury was arrested, but before the case was tried an examination made by a physician revealed the fact that the man with the broken head had what is technically called a "paper skull"—an abnormally thin skull. The trial took place. The case was clear. The defendant was about to be sentenced when the judge asked him if he had anything to say. He said, "Nothing, your honor, but I would like to ask one question: What would a man with a paper skull be doing at Tim Finnegan's wake?" (Laughter.) Evidently the wrong place for a paper skull.

I hope to justify my presence here this afternoon by my interest in and studies of certain phases of orchard management, as well as the general sphere of work in which you are interested.

NATURE STUDY.

I was delighted to hear the remarks of Governor Bachelder, on the subject of nature studies, in the schools, for nature study is simply another name for elementary agriculture.

We have had opportunity of testing that method of presenting agriculture in the rural and village schools, in the state of New York, and our experiment has extended over a period of five or six years, and I am delighted to be able to substantiate and corroborate every word that Governor Bachelder has said in regard to the efficiency of that method.

It is a common sense method; in fact, it is *the* common sense method; it is simply educating the boy and the young girl to appreciate their environments and thus fitting them for an intelligent interest in the common things of life.

But I must not digress from the particular topic that I am to present to you.

I am very glad to know, or rather to feel, that your interest in horticulture is real. The supposition is that this topic would not have been placed on the program had this interest not been real. It should be real at any rate if we are to give orcharding its due as set forth by the facts and evidence brought to us by the statistics.

VALUE OF ORCHARD PRODUCTS.

We learn that in the value of orchard crops California, New York, Pennsylvania and Ohio, and Illinois, lead all the other states. The value in dollars of the orchard crops of these states, and their place during the census years from 1850 to 1890 were something as follows: In 1850 California stood twenty-seventh in the list of states, based upon the value of their orchard crops; in 1890 California stood first. In 1850, Ohio produced six hundred and ninety-five thousand dollars' worth of orchard products and was third on the list; in 1890 Ohio produced six million one hundred and forty-one thousand dollars' worth of orchard products and was fourth on the list. So that within that period of forty years Ohio only dropped back one place—in fact, actually did not drop back, as we can see by the figures, but was simply superseded by the more rapid growth of her sister on the Pacific coast. While New York and Ohio have done well, they have been obliged to give a place at the head of the list to their progressive rival.

It is interesting to note that during this period the value of orchard products per capita vastly increased. It not only kept pace with the increase of population, but it vastly surpassed the growth of population. In 1850 it was thirty-four cents per capita, while in 1900 it amounted to one dollar and fourteen cents per capita.

The apple is the staple orchard fruit of the north, and fifty-five per cent. of all the fruit trees of the United States are apple trees. The apple represents eighty-five per cent. of the value of the fruit crops of the United States.

Of the one hundred and seventy-five million bushels produced in the United States in 1899, three states—New York, Pennsylvania and Ohio—contributed sixty-nine million bushels, or over thirty-four per cent. of the total output.

CONSUMPTION OF FRUIT.

It behooves us, then, in New York, in Pennsylvania and in Ohio, to study the methods whereby this crop may be grown in its greatest excellence and the trees maintained in the healthiest possible condition.

In good crop years we export approximately three million bushels of apples and we consume at home about two bushels per individual. I think it would be better for most of us if it were more evenly divided. I do not mean to say that the large consumer suffers, but I think the light consumer or the non-consumer should consume more.

SYSTEMS OF ORCHARD MANAGEMENT.

I am to speak on the methods of managing orchards. The growing of fruits in our time is becoming more and more a commercialized business. It is a business man's business, and the business man is the man who succeeds. It is not only important that a man should understand the principles of the growing, but he should also understand the business or marketing end. Business methods, we are happy to note, are to a greater extent pervading the management of orchards every year. Never was there a time when competition was keener, when methods of orchard procedure were more carefully studied. This study has brought into relief several more or less clearly defined systems of orchard management.

Orchard management may not be restricted to the treatment of the soil. The subject can not be treated acceptably apart from the consideration of the tree and of the fruit. The subject then divides itself into three logical groups:

First—The soil.
Second—The tree; and
Third—The fruit.

I am not going to cover the whole field, but will practically restrict my remarks to a consideration of the fruit. The problems of soil management are fundamental, however, and the soil of the orchard is at once the most important and the most difficult.

There is a great difference of opinion among fruit growers as to soil management, and it is reasonable that there should be a great diversity of opinion, because there is a diversity in soil. Why should we expect methods of treatment to be identical under these circumstances?

The various systems of soil management may be classified as follows:

First—Clean culture.

Second—Clean culture with cover crops.

Third—Grass mulch; occasional, and much talked about. Success depends upon soil and man.

Fourth—Pasture—and I am sorry to say the commonest method, because the easiest.

Fifth—Meadow—much too common, and most pernicious of all.

Considerable discussion regarding the realtive merits of these systems has taken place in recent years, and the principal difficulty has been that many who have taken a hand in the discussion have presented arguments based upon limited experience and strongly biased by personal preference. It is also very difficult to collect a sufficient mass of evidence in favor of any one system to warrant a conclusion which might be reached as being unassailable.

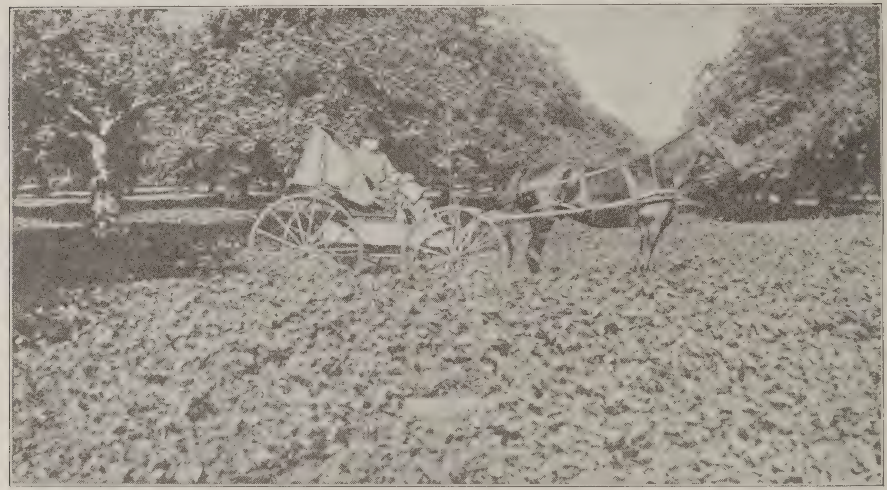

Fig. 1.—Baldwin orchard with a cover crop of cow pease, western New York.

INFLUENCE OF TILLAGE.

We have been preaching clean culture in New York for a number of years. We have been urging it because we believed in it—and I think a man can never advocate a thing well unless he does believe in it. Sometimes, however, a teacher teaches before he himself believes, and in this way becomes convinced.

We have been preaching tillage, and pruning and spraying because we have tried it in an experimental way, and our experiments have convinced us that it was a good thing.

I am very glad to be able to give you some facts which have not yet been published, which have been gathered upon a sufficiently comprehensive basis to place this question of the influence of types of treatment upon orcharding quite beyond the pale of questioning, in our conditions—and our conditions in New York are not so widely different from those which obtain in Ohio as to prevent you from applying these findings with confidence in your own surroundings.

What is the influence of tillage on the yield of fruit? What is the influence of soil on the yield of fruit?

The only way to answer these questions is to secure the information in the field of observation. We have been collecting such facts in New York for the past two years. We have been spying out the orchards of the fruit growers. We have been studying their methods and in this way been stealing their information. We hope to give it back to them collectively and in the meantime we will lend you a little of it. We are glad to reciprocate. We secured a good man from Ohio a year or two ago in Professor Hunt, and we do not mind loaning a little of this information obtained from our farmers in return.

Here is a census of some five hundred orchards in one of the leading apple counties in the western part of the state. I have a lot of figures giving much interesting data, but I am not going to weary you by reading them in detail. I will give you the final figures.

INFLUENCE OF TILLAGE ON YIELD, CENSUS OF ONE TOWNSHIP THREE YEARS.

BUSHELS PER ACRE.

How treated.	1900. No. of orchards examined.	1900. Acres.	1900. Yield.	1901. No. of orchards examined.	1901. Acres.	1901. Yield.	1902. No. of orchards examined.	1902. Acres.	1902. Yield.
Tilled	29	145	347	26	155	59	42	303	300
Tilled most years	29	94	388	32	123	79	59	220	265
Sod most years..	33	145	293	43	190	54	69	306	227
Sod many years....	26	100	264	40	181	44	70	295	202

Tilled, average for three years........................	235 bushels per acre
Tilled most years, average for three years................	229 bushels per acre
Sod most years, average for three years..................	191 bushels per acre
Sod many years, average for three years..................	170 bushels per acre

In the case of approximately 500 orchards examined, which were tilled for three years consecutively previous to the examination—and tilled the most of the time before that—yielded an average for four years of two hundred and thirty-five bushels per acre. Those six hundred orchards represented some one thousand five hundred acres of orchard land, and yielded an average of two hundred and thirty-five bushels per acre in the four years.

A slightly less number of orchards, tilled most of the years, now and then run into sod for a year or two, but tilled the most of the years, yielded two hundred and twenty-nine bushels per acre, a falling off of six bushels on the average.

A slightly smaller number of orchards which had been in sod most of the years for the four years during which we examine that, yielded one hundred and ninety-one bushels per acre.

About the same number of orchards between four and five years which were in sod nearly all the time—practically all the time, so it was stated, yielded one hundred and seventy bushels per acre.

Now, then, for the tilled orchards we have a yield of two hundred and thirty-five bushels per acre; for the sod orchards—those which were in sod all the time—one hundred and seventy bushels per acre, a difference per acre per year of sixty-five bushels. That sixty-five bushels would represent a fair profit on an acre of land when the fruit was sold at a reasonable price.

This examination was all included in one township. I have the figures for the entire orchards for the county—I mean of those orchards greater than four acres in extent. Some of the smaller orchards we were obliged to miss.

INFLUENCE OF TILLAGE ON YIELD, WAYNE COUNTY, NEW YORK.

TREES SET BEFORE 1880.

	No. of orchards.	Acres.	Average yield.	No. of orchards.	Acres.	Average yield.	No. of orchards.	Acres.	Average yield.	No. of orchards.	Acres.	Average yield.	4 years average.
Tilled 5 years or more	35	222	341	32	232	82	53	483	317	31	379	325	266
Tilled most years	36	298	309	38	319	73	67	428	279	24	125	255	229
Sod most years	43	241	301	54	292	56	85	491	214	31	225	238	202
Sod 5 years or more........	51	620	156	69	609	31	122	1,100	176	43	368	235	150

FOUR YEARS AVERAGE—ORCHARDS ALL RECEIVED SOME FERTILIZER. FAIRLY WELL CARED FOR.

Treatment.	Total No. Orchards Examined.	Total Acres.	Average Yield Per Acre.
Tilled five years or more	114	1,213	270
Tilled most years	98	762	247
Sod most years	116	971	209
Sod five years or more	119	938	197

For the entire county the figures vary slightly. It happened to be larger than the figures quoted. They averaged for the four years two hundred and seventy bushels for the tilled orchards; two hundred and forty-seven for the second grade, two hundred and nine for the third and one hundred and ninety-seven for the fourth, or a difference of seventy-three bushels in favor of tillage over non-tillage. This for an examination of several years, with the orchards not in ideal conditions, but under the conditions that you find them in in the best fruit growing counties of western New York. Therefore, it is not an experiment. It is an investigation of actual conditions.

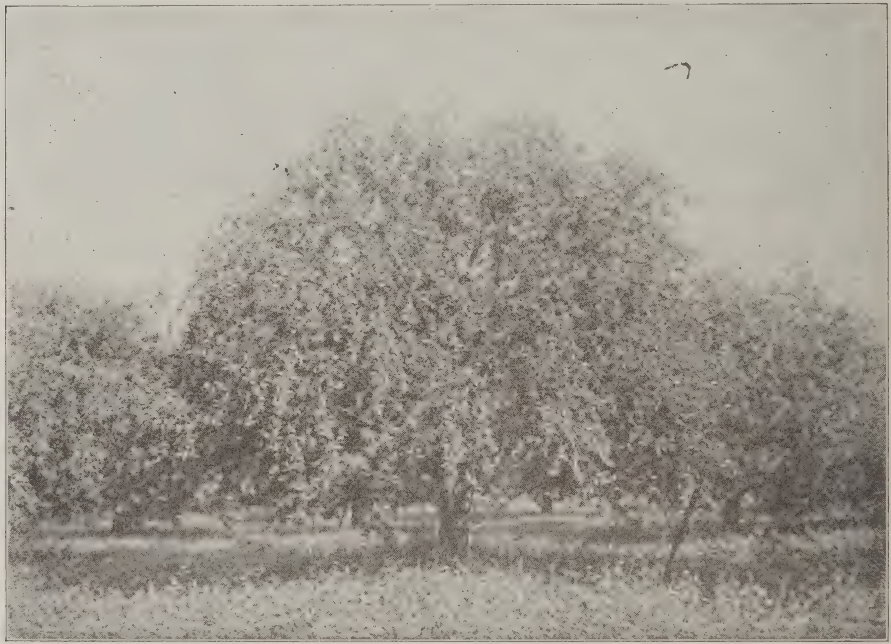

Fig. 2.—An ideal 45-year-old Baldwin tree. Note area of bearing surface.

I am not going to discuss with you the relative advantages of these different systems of orchard tillage. I can conceive that a man under peculiarly favorable conditions of soil, with an ideal in his own mind which he absolutely lived up to, could discount any of these yields with another type of treatment, but that man and those conditions are exceedingly rare.

PRODUCTIVE AGE OF APPLE TREES.

Another rather interesting thing—and it is a phase of orchard management—which was discovered by our census, was the age at which our trees in western New York gave their maximum crop. An examination of some five hundred orchards revealed the fact that trees in that district gave the largest return at forty-five years of age. Trees at forty-five years of age over a period of four years yielded two hundred and fifty-seven bushels per acre.

YIELD INFLUENCED BY AGE OF TREES.

	Age.	No. Orchards Examined.	Average Yield Four Years.
Set before 1840	65	46	171 bushels
1840-49	60	60	175 bushels
1850-54	50	130	168 bushels
1855-59	45	117	257 bushels
1860-64	40	354	218 bushels
1865-69	35	275	200 bushels
1870-74	30	175	191 bushels
1875-79	25	106	202 bushels
1880-84	20	56	115 bushels
1885-89	15	21	66 bushels
1890-94	10	38	56 bushels

Baldwin, Greening, Spy, King, Twenty Ounce. Period of maximum yield forty to forty-five years in western New York.

This is significant. How many of our orchards begin to fail before they reach the age of forty years? Too many I fear. As a matter of fact they have not reached their full maturity at that time, and the reason they have not arrived at full maturity is that they have not been cared for.

In this particular region trees sixty-five years old yielded one hundred and seventy-one bushels per acre. Probably conditions for longevity of trees are a little more favorable along Lake Ontario than they are as we come west.

What about distance apart?—another phase of orchard management. How far apart shall we plant our trees? Shall we get more friut by planting thirty feet, thirty-five feet, forty feet, forty-five feet, or a less distance? In the census covering the same number of orchards and many thousand trees here are figures on yields at different distances:

INFLUENCE OF DISTANCE OF PLANTING ON YIELD.

The average yield for trees thirty by thirty feet apart was one hundred and eighty-four bushels per acre for four years; the average yield for trees between thirty-one and one-half feet and thirty-five feet—there are many of them thirty-five—for four years was two hundred and twenty-two bushels per acre; the average yield for trees between thirty-six feet each way and forty feet each way, was two hundred and twenty-nine bushels per acre. The fewer the trees, the more the apples, the larger the yield.

I am speaking of our own conditions—I don't know anything about your conditions—but I assert positively in many cases in western New York in regions where they think they know how to grow apples, and where they are growing apples, a good many of them, the worst enemy of the orchard is the apple tree.

The trees are fighting each other, killing each other off. The trend of planting in the last forty years has been from an average distance of thirty-one feet and six inches to an average distance of thirty-six feet and two inches in our leading apple-growing regions, showing that the grower is recognizing conditions and is varying his practice as his pocketbook teaches him.

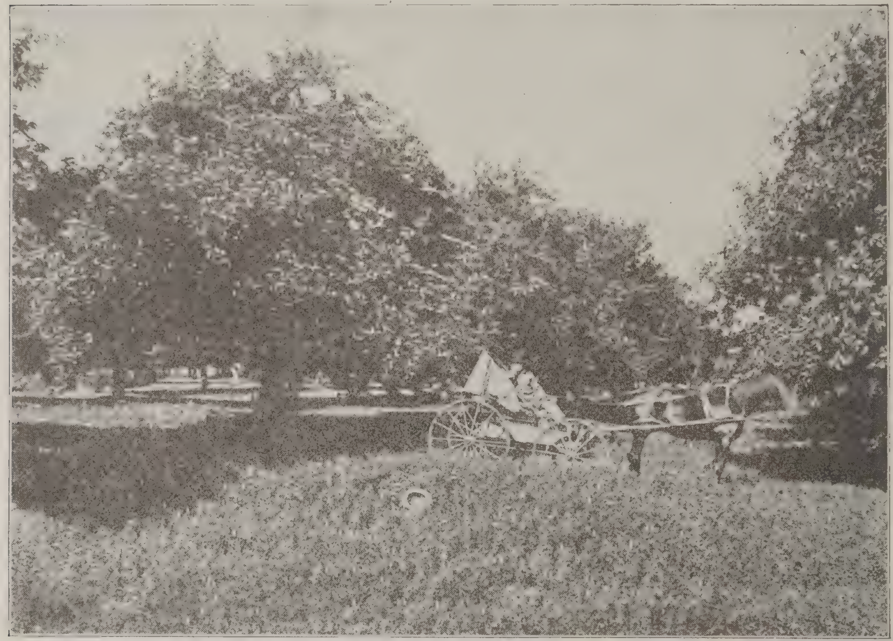

Fig. 3.—Cover crop. Alfalfa as an orchard cover crop in western New York.

INFLUENCE OF THE RENTER ON APPLE PRODUCTION.

Here is a table that I should have drawn your attention to before, as it bears upon the tillage question. Also it bears upon another rather important subject —question of rural economy:

CENSUS OF RENTED ORCHARDS—TREES SET BEFORE 1880.

	No. of orchards.	Acres.	Per cent.	No. of orchards.	Acres.	Per cent.	No. of orchards.	Acres.	Per cent.
Owned	243	1,080	81	85	1,451	75	328	2,531	77
Rented	64	259	19	27	487	25	101	747	23

INFLUENCE OF THE RENTER ON YIELDS.

	1900.			1901.			1902.			1903.		
	No. of orchards.	Acres.	Average yield.	No. of orchards.	Acres.	Average yield.	No. of orchards.	Acres.	Average yield.	No. of orchards.	Acres.	Average yield.
Owned	125	929	283	150	1,174	57	257	1,940	239	132	1,156	260
Rented	28	318	249	43	480	45	73	604	187	21	248	174

Average of four years owned...........	210 bushels per acre.
Average of four years rented............	174 bushels per acre.

This difference is equal to 600,000 bushels of apples, or $300,000 added to value of products of county in three years.

What influence has the renter on the production of a given area of apples? I was very much surprised that he was such an important factor. In one township in western New York three hundred and ten orchards cared for by the owner yielded in 1892 an average of two hundred and sixty-one and seven-tenths bushels per acre; two hundred rented orchards yielded an average of one hundred and ninety-two bushels per acre. The average for the owned orchards of

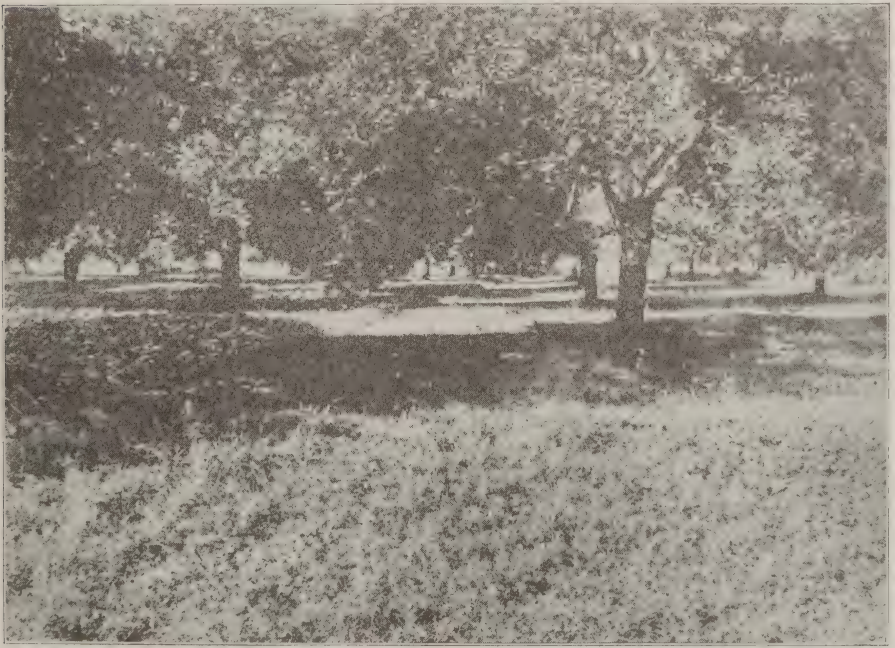

Fig. 4.—Cover crops. Vetch and cow pease in a western New York orchard.

the county was two hundred and seventeen bushels per acre; for the rented orchards for the county one hundred and eighty-two bushels per acre.

What did that difference represent in the total yield of the apple-producing county? It represented five per cent. depreciation; it represented in bushels, two hundred thousand; it represented many thousands of dollars less revenue in the county. It incidentally brings home the lesson of good care and tillage as a factor in orchard production.

DOES SPRAYING PAY?

We endeavored to get some figures on spraying and the influence of spraying—another important factor in orchard management. Even in New York all orchardists do not all spray. A good many of them don't; a good many of them spray and don't spray well. So that this census represents every man who squirted any fluid over the trees, whether it was one time or three times, whether it was well done or otherwise. In the average of cases it was one time only, and I was going to say in the average of cases it was only poorly done. Whatever spraying was done, did have an affect on not only the quality of the fruit, but on the yield of the trees. There were six hundred and twenty-six acres in one township sprayed. These six hundred and twenty-six acres yielded an average of two hundred and eighty bushels per acre. There were six hundred and seventy-three acres in the same township of orchards of the same character—we tried to select orchards which had the same sort of fruit in order to make the comparison fair—which were not sprayed. These yielded two hundred and fifty-three bushels per acre.

What was the price for the sprayed, and the unsprayed? Was there any difference? There were eight thousand four hundred and thirty barrels of sprayed fruit which was sold for two dollars and two cents a barrel in 1903—not in 1904. There were six thousand three hundred and sixty-five barrels of unsprayed fruit which were sold for one dollar and eigthy cents a barrel, a difference of twenty-two cents a barrel.

INFLUENCE OF SPRAYING.

	No. of Orchards.	No. of Acres.	Average Yield in Bushels per Acre.
Sprayed	66	626	280
Unsprayed	107	673	253

PRICE PER BARREL, 1903.

	No. Bbls.	Average Price Per Barrel.
Sprayed	8,430	$2.02
Unsprayed	6,365	1.80

CROP OF 1903.

	No. of Bushels.	Average Price per Bushel.
Sprayed	110,445	31.8
Sprayed and dried by owner	63,145	....
Unsprayed	96,345	27.7
Unsprayed and dried by owner	64,305	....
Income per acre sprayed		$77.84
Income per acre unsprayed		63.00
Difference		$14.84

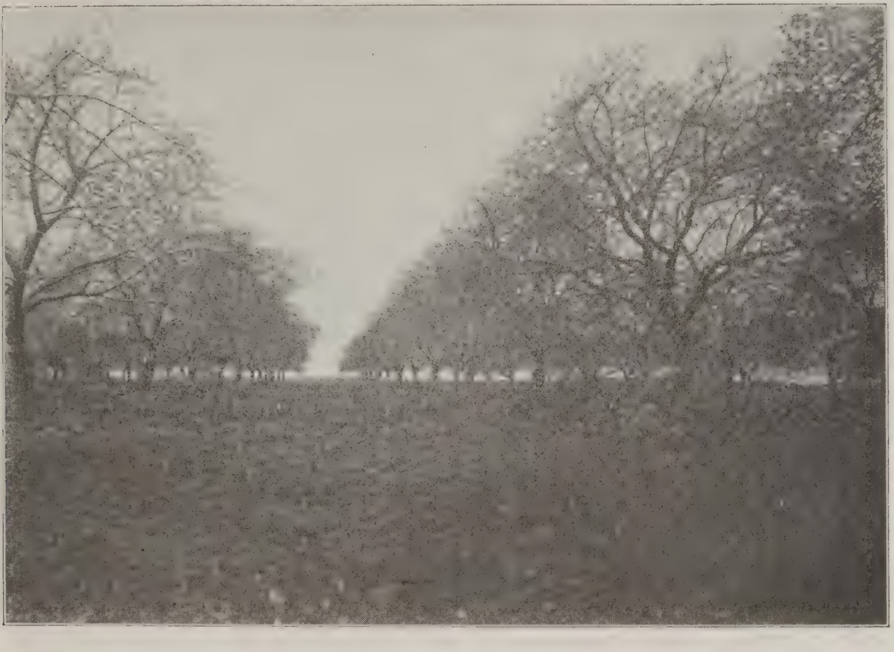

Fig. 5.—Cover crop. The appearance of a cover cropped orchard in spring. Trees properly spaced, 45 years' old. 45x45 feet apart.

In the entire crop of 1903, in bushels there were sprayed one hundred and ten thousand, four hundred and forty-five, bringing an average price of thirty-one cents a bushel. Of this the owner sold, on account of poor quality, sixty-three thousand, one hundred and forty-five bushels to the dry house. The first number of bushels, one hundred and ten thousand were packed and shipped; they were good enough to pack and ship, while the others were sent to the dry house because they were not good enough to pack and ship.

In the unsprayed there were ninety-six thousand, three hundred and forty-five bushels, and these were sold at twenty-seven and seven-tenths cents per bushel, and of that sixty-four thousand, three hundred and five bushels went to the dry house—a much larger percentage as you see.

The income per acre for the sprayed trees was seventy-seven dollars and eighty-four cents, and for the unsprayed area sixty-three dollars, a difference of fourteen dollars and eighty-four cents in favor of the spraying. I have not got the figures for the spraying, but the spraying certainly did not cost on an average of more than five dollars per acre, and probablly it was much less.

Mr. President, you have had an exceedingly full and interesting program this afternoon. I am very glad to have had the opportunity of presenting these facts. I am going to let the facts soak in. I hope they will be of some suggestive value to you. I hope that many of you who are teachers in Farmers' Institutes, and others, will find some substantial reasons for teaching good tillage and good care of orchards, and in teaching the underlying principles of orchard management, if I have given you suitabe arguments, I shall feel doubly repaid for the privilege of being here. (Great applause.)

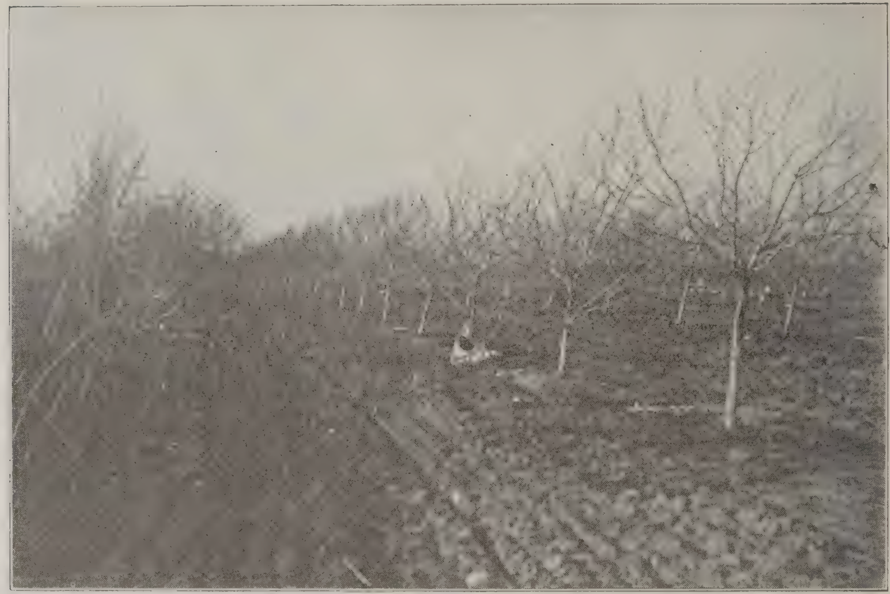

Fig. 6.—Tillage. This commenced in this case with a gang plow turning a shallow furrow. It is completed with an extension disk harrow.

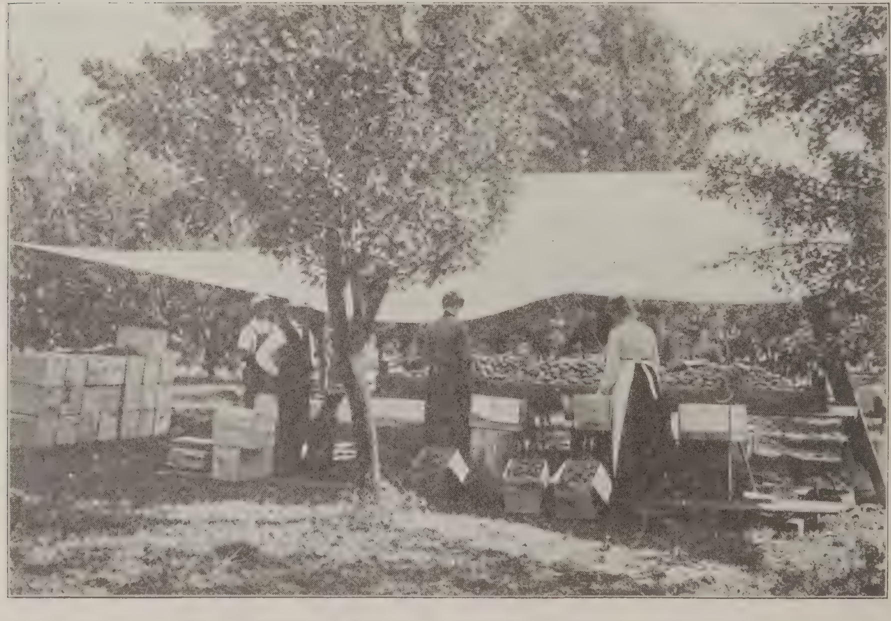

Fig. 7.—Packing pears in an Oswego county orchard.

President Carpenter: Gentlemen, the next in order will be the election of two members of the State Board of Agriculture.

I have appointed as tellers: Mr. J. C. Royan, of Shelby county, and Mr. W. H. Hannah, of Wood county.

They will please come to the secretary's desk.

Hon. T. R. Smith, of Delaware county: If I am in order, I would like to inquire as to the business before this body—is it the election of two members of the board?

President Carpenter: Yes, sir.

Mr. Smith: Mr. President, there were but two names mentioned, and there are but two offices to fill; am I right?

President Carpenter: You are correct.

Mr. Smith: I move that the secretary of this board be instructed to cast the ballot of this convention for these two gentlemen.

President Carpenter: This may be done by unanimous consent. If there are no objections it may be so done, provided the motion prevails. Does the chair hear any objection? (Silence.) There being no objection you have heard the motion that the secretary be instructed to cast the vote of this annual meeting for the only two candidates nominated for the office. Are you ready for the question? (Cries of "Question." "Question.") You, who are of the opinion that the motion should prevail, will say aye (Loud cries of "Aye."); contrary no. (Silence.) It is carried unanimously, and the secretary is instructed to cast the vote for the only two candidates named, Messrs. Cromley and Calvert.

Secretary Miller: I hereby cast the unanimous vote of the Ohio State Board of Agriculture for Thaddeus E. Cromley, of Pickaway county, and Thomas L. Calvert, of Clark county, for members of the Ohio State Board of Agriculture, for the legal term of five years.

President Carpenter: Gentlemen of the Board, you have elected to serve you for the next five years Mr. T. E. Cromley, of Pickaway county, and Mr. T. L. Calvert, of Clark county.

Is the Committee on Resolutions ready to report? The chairman of the Committee on Resolutions will please present the report of the committee.

Hon. R. O. Hinsdale presented the following report of the Committee on Resolutions:

WHEREAS, The business of agriculture is the largest industry of the country, as it represents more capital invested, employs more people, produces a greater output of product than any other, or several others combined, and, inasmuch as it is the basic or underlying rock upon which all other industries must depend, as it not only feeds but clothes the world it should be not only the one to be first preserved but should be fostered by both our state and national governments; and, while we appreciate the protecting care that has been thrown around it in the way of state and national appropriations, and while we do not ask for or desire more than our just share of recognition, we feel that it is not only justice to ourselves but to other industries that our state and national governments should furnish it all the needed aid, financial and otherwise, that they are capable of doing—that the opportunities for research, experiments and markets, with the facilities of reaching these markets, be made broader and more complete. While we have been receiving this care of our governments, we urge upon our people the necessity of making more and more use of these advantages and opportunities at our hands, that the agriculturists may be peer and more than peer in intelligence, methods of business, and all the comforts of civilization; and, while we believe all these things to be true, just and right, we

Resolve, First, that we appreciate and thank our state legislature for providing, and our Governor for making available, such liberal appropriations for the improvement and encouragement of agriculture.

Second, that we appreciate and thank the national government for its help in advancing our interests.

Third, that we respectfuly request each of these to not only continue this protecting care, but to extend it to its fullest limit.

Fourth, that we request our national congress, and especially our members of it, to protect us from all of the threatening dangers that are just now attempting to assert themselves to the injury of our valued industries.

Respectfuly submitted and signed by your committee,

R. O. Hinsdale,
D. L. Sampson,
J. W. Crowl.

A member: I move you the adoption of the report of the committee.

Motion unanimously carried.

Mr. E. H. Cushman, of Lucas county: I move we adjourn.

President Carpenter: Gentlemen, it affords me pleasure to express my gratitude for the magnificent attendance and the good attention which you have given in these meetings, and I want to thank you in a special manner for it.

I hope you may return to your homes safely, and that the year 1905 will be the most prosperous year in the history of your lives.

Thanking you all, I now declare this annual meeting of the Ohio State Board of Agriculture duly adjourned. (Applause.)

Fifteenth Annual Report

OF

FARMERS' INSTITUTES

HELD IN OHIO DURING THE WINTER OF 1904-1905.

In presenting this, the Fifteenth Annual Report of Farmers' Institutes in Ohio, to the people of the state, it gives the Ohio State Board of Agriculture much pleasure to say that the work has not fallen off in any particular during the institute season just closed. On the contrary, there has been a continued growth of interest shown all along the line, and in no season have reports from institute officers shown such a uniform condition of health and activity. Reports show no lack of willing workers, ready to deliver addresses, enter into discussions, and eager to co-operate with the speakers sent out by the State Board of Agriculture, in every way possible. Time has proved the wisdom of the State Legislature in lending liberal aid to this important work.

The institute season just closed began on Monday, December 5, 1904, and ended February 25, 1905. There were scheduled two hundred and forty-three (243) institutes, covering every county in the state, and all were held. Many independent institutes were also held, of which thirty-eight reported to the Department of Agriculture. Reports and papers received from these independent institutes show that they are accomplishing much good, and the board wishes at this time to thank the local committees of and the participants in them for the excellent work they are doing. With the increased interest in institute work, it will doubtless transpire that independent institutes will be greatly multiplied from year to year, and it is hoped that such will be the case, for their work is too valuable to be lost.

The State Farmers' Institute was held in Columbus, January 10 and 11, 1905. This important gathering of institute workers from all portions of the state was more successful and more largely attended than ever before. Important papers were presented, and notable speakers from this and from other states were present. It is to be regretted that all agriculturists cannot avail themselves of the good resulting from such a meeting, but the increased attendance from year to year shows that few absent themselves from choice. Especial pains is taken in preparing the program of this institute, and the desire is to reach as many of the active agriculturists of the state as is possible. A full report of this institute precedes this report.

In compliance with the law governing farmers' institutes in Ohio, there is published with this report a detailed account of moneys received and expended and institutes held during the season; also a report of independent institutes from which reports were received, and many papers read at institutes on subjects of interest to farmers and their families. Many valuable papers were necessarily returned to the writers, because of so many having been sent in on similar lines of thought. The Committee on Publication, while realizing the difficulty of making a choice amongst so much good material, has endeavored to cover as much ground as possible with the material offered.

The Ohio State Board of Agriculture wishes to thank the State Legislature for its continued cordial support of this work; the press for its many courtesies and cheerful co-operation, and the citizens of Ohio, who, by their active and constant effort, have made the continuance of this grand work possible.

THE OHIO STATE BOARD OF AGRICULTURE.
By WELLS W. MILLER, *Secretary.*

COLUMBUS OHIO, March 22, 1905.

FINANCIAL STATEMENT.

The following statement shows the receipts and disbursements of the Ohio State Board of Agriculture on account of Farmers' Institutes per capita, being the State Board's share of the six mills per capita, sections 3713-1 to 3713-6, inclusive, of the Revised Statutes of Ohio.

RECEIPTS.

Amounts collected from the counties on the basis of three mills per capita, being the State Board's share of the six mills per capita allowance provided by law for the maintenance and support of County Institute Societies in Ohio:

Adams County	$78 98
Allen County	125 00
Ashland County	63 55
Ashtabula County	125 00
Athens County	116 19
Auglaize County	93 58
Belmont County	125 00
Brown County	84 71
Butler County	125 00
Carroll County	50 43
Champaign County	79 93
Clark County	125 00
Clermont County	94 83
Clinton County	72 61
Columbiana County	125 00
Coshocton County	88 01
Crawford County	101 74
Cuyahoga County	125 00
Darke County	125 00
Defiance County	79 16
Delaware County	79 20
Erie County	112 95
Fairfield County	102 78
Fayette County	65 17
Franklin County	125 00
Fulton County	68 40
Gallia County	83 75
Geauga County	44 23
Greene County	94 84
Guernsey County	103 27
Hamilton County	125 00
Hancock County	125 00
Hardin County	93 56
Harrison County	61 46
Henry County	81 85
Highland County	92 95

Hocking County	$73 19
Holmes County	58 53
Huron County	96 99
Jackson County	102 74
Jefferson County	125 00
Knox County	83 30
Lake County	65 04
Lawrence County	118 60
Licking County	125 00
Logan County	91 26
Lorain County	125 00
Lucas County	125 00
Madison County	61 75
Mahoning County	125 00
Marion County	86 03
Medina County	65 87
Meigs County	85 86
Mercer County	84 06
Miami County	125 00
Monroe County	81 09
Montgomery County	125 00
Morgan County	53 71
Morrow County	53 64
Muskingum County	125 00
Noble County	58 40
Ottawa County	66 64
Paulding County	82 58
Perry County	95 52
Pickaway County	81 05
Pike County	54 52
Portage County	87 74
Preble County	71 14
Putnam County	97 57
Richland County	125 00
Ross County	122 82
Sandusky County	102 93
Scioto County	122 94
Seneca County	123 49
Shelby County	73 87
Stark County	125 00
Summit County	125 00
Trumbull County	125 00
Tuscarawas County	125 00
Union County	67 03
Van Wert County	91 18
Vinton County	45 99
Warren County	76 75
Washington County	125 00
Wayne County	113 61
Williams County	74 86
Wood County	125 00
Wyandot County	63 37
Total	$8,373 81

DISBURSEMENTS.

For per diem and expenses of lecturers, as follows:

Allen, F. L., Kinsman, twenty-four days	$210 20
Baldwin, S. J., Tallmadge, thirty days	277 23
Begg, John, Columbus Grove, forty-eight days	381 00
Blackford, Frank, Eldorado, twenty-four days	194 85
Brigham, J. S., Bowling Green, thirty days	237 20
Chamberlain, W. I., Hudson, thirty-six days	297 49
Cook, William M., Camden, thirty days	250 58
Derthick, F. A., Mantua, twelve days	92 85
Dobie, J. Al., St. Johns, fifty-four days	431 40
Dunlap, R. W., Kingston, forty-eight days	384 95
Farnsworth, W. G., Waterville, eighteen days	147 45
Houskeeper, G. C., Bowling Green, forty-eight days	402 95
Judy, A. H., Castine, twenty-four days	202 65
McIntire, Charles, Chandlersville, thirty-six days	304 55
Miller, H. P., Sunbury, eighteen days	136 40
Montgomery, Cary W., Newark, forty-two days	327 15
Rathbun, Rei, Springfield, forty-two days	355 15
Riggs, Ernest J., Raccoon Island, twenty-four days	195 15
Roudebush, Lowell, New Richmond, fifty-four days	423 00
Scott, George E., Mt. Pleasant, forty-eight days	396 25
Shawver, John L., Bellefontaine, forty-two days	341 47
Snider, E. P., Monroeville, fifty-four days	434 20
Spencer, L. G., Latimer, thirty-six days	304 40
Strode, S. E., Pennsville, thirty days	266 85
Thomas, M. C., Mingo, thirty days	257 10
Wagner, C. R., Arlington, forty-two days	367 85
Wallace, R. H., Chillicothe, forty-eight days	384 30
Printing and postage and sundry expenses of the State Farmers' Institute	369 19
Total	$8,373 81

FARMERS' INSTITUTES HELD IN OHIO DURING THE SEASON BEGINNING DECEMBER 5, 1904, AND ENDING FEBRUARY 25, 1905.

Counties.	Population.	Institutes Held.		Attendance Reported.	Local Expenses Reported by Societies.	Per Capita Allowance to Institute Societies Under the Institute Law.
		Where.	When.			
Adams	26,328	Wamsley	December 5–6	150	$26 32	$78 98
		Cherryfork	December 7–8	300	30 62	
		Peebles	December 26–27	275	30 00	
Allen	47,976	Beaverdam	December 28–29	275	31 25	125 00
		Harrod	January 25–26	400	34 00	
		Spencerville	February 3–4	225	10 89	
		Delphos	February 15–16	300	53 00	
Ashland	21,184	Nova	December 26–27	500	31 77	63 55
		Loudonville	January 27–28	250	30 70	
Ashtabula	51,448	Andover	December 9–10	350	31 25	125 00
		Pierpont	January 6–7	350	31 25	
		Geneva	January 16–17	310	26 00	
		Orwell	January 27–28	350	31 00	
Athens	38,730	Albany	December 16–17	200	29 04	116 19
		Athens	January 20–21	400	29 04	
		Coolville	February 6–7	225	24 60	
		Amesville	February 22–23	220	17 00	
Auglaize	31,192	Buckland	December 30–31	200	33 32	93 58
		Cridersville	January 23–24	300	41 55	
		Uniopolis	February 24–25	500	31 20	
Belmont	60,875	Colerain	December 12–13	300	47 20	125 00
		Barnesville	January 2–3	63	60 00	
		Morristown	January 27–28	200	33 25	
		Loydsville	February 17–18	275	80 70	
Brown	28,237	Mt. Orab	December 28–29	100	28 23	84 71
		Ripley	January 2–3	100	28 30	
		Fayetteville	January 23–24	350	28 23	
Butler	56,870	Monroe	December 14–15	236	35 60	125 00
		Collinsville	December 30–31	250	41 66	
		Oxford	February 10–11	300	46 90	
Carroll	16,811	Carrollton	January 6–7	700	35 00	50 43
		Malvern	February 20–21	400	25 50	

Champaign	26,642	Kings Creek	December 12–13	225	31 58	79 93
		Westville	February 10–11	400	40 00	
Clark	58,939	Tremont City	December 14–15	200	31 25	125 00
		Donnelsville	January 30–31	325	41 99	
		Pitchin	February 13–14	300	70 05	
		Vienna Crossroads	February 20–21	200	26 48	
Clermont	31,610	Owensville	December 30–31	450	47 50	94 83
		Laurel	January 4–5	450	65 55	
Clinton	24,202	Midland	December 23–24	400	36 30	72 61
		Wilmington	January 27–28	600	63 60	
Columbiana	68,590	Rogers	December 12–13	250	31 25	125 00
		Damascus	December 14–15	500	31 25	
		Lisbon	January 27–28	700	65 00	
		New Waterford	February 13–14	250	35 00	
Coshocton	29,337	New Guilford	December 9–10	275	43 55	88 01
		West Lafayette	January 2–3	350	31 25	
Crawford	33,915	Sulphur Springs	December 19–20	200	33 91	101 74
		Bucyrus	January 6–7	800	33 90	
		Galion	January 25–26	500	33 91	
Cuyahoga	439,120	Mayfield	December 30–31	300	32 00	125 00
		Solon	January 23–24	325	31 25	
		Strongsville	February 1–2	400	31 25	
		Olmstead Falls	February 13–14	450	31 25	
Darke	42,532	Versailles	December 21–22	200	31 25	125 00
		New Madison	December 26–27	300	31 25	
		Arcanum	January 16–17	750	84 45	
		Gettysburg	February 6–7	650	38 10	
Defiance	26,387	Sherwood	December 30–31	300	30 50	79 16
		Defiance	February 24–25	325	38 71	
Delaware	26,401	Sunbury	December 30–31	200	39 60	79 20
		Delaware	February 1–2	350	32 47	
Erie	37,650	Berlin Heights	December 21–22	300	37 50	112 95
		Castalia	January 16–17	500	37 65	
		Milan	February 17–18	250	37 65	
Fairfield	34,259	Baltimore	December 21–22	275	35 65	102 78
		Amanda	January 16–17	350	53 55	
		Bremen	February 15–16	450	42 02	
Fayette	21,725	Goodhope	January 20–21	500	36 25	65 17
		Jeffersonville	February 8–9	220	32 58	
Franklin	164,460	Canal Winchester	December 19–20	200	29 15	125 00
		Hilliard	December 26–27	400	31 25	
		Pleasant Corners	January 30–31	270	31 25	
		Westerville	February 24–25	300	32 25	
Fulton	22,801	Fayette	December 26–27	268	34 20	68 40
		Delta	February 8–9	500	28 54	
Gallia	27,918	Cheshire	December 7–8	250	35 00	83 75
		McCormick	January 4–5	250	26 70	
Geauga	14,744	Middlefield	December 26–27	200	27 60	44 23
		Thompson	January 18–19	300	17 30	
Greene	31,613	Cedarville	December 28–29	400	40 85	94 84
		Jamestown	January 20–21	450	39 23	
		Alpha	February 15–16	625	41 06	
Guernsey	34,425	Cumberland	December 23–24	200	17 00	103 27
		Antrim	January 25–26	290	34 42	
		Quaker City	February 13–14	450	60 00	

FARMERS' INSTITUTES HELD IN OHIO DURING THE SEASON BEGINNING DECEMBER 5, 1904, AND ENDING FEBRUARY 25, 1905—Continued.

Counties.	Population.	Institutes Held.		Attendance Reported.	Local Expenses Reported by Societies.	Per Capita Allowance to Institute Societies Under the Institute Law.
		Where.	When.			
Hamilton	409,479	Blueash	December 16–17	350	$31 25	$125 00
		Newtown	January 6–7	250	31 25	
		Harrison	February 6–7	350	31 25	
		Mt. Healthy	February 8–9	300	34 50	
Hancock	41,993	McComb	December 19–20	200	46 20	125 00
		Mt. Blanchard	January 2–3	250	31 25	
		Benton Ridge	January 30–31	460	32 94	
		Arcadia	February 8–9	425	37 75	
Hardin	31,187	Ada	December 23–24	350	46 78	93 56
		Forest	January 27–28	390	66 75	
Harrison	20,486	Cadiz	December 16–17	240	137 00	61 46
Henry	27,282	Sharon Church	December 16–17	500	46 35	81 85
		Grelton	February 22–23	500	44 75	
Highland	30,982	Buford	December 9–10	400	34 45	92 95
		*Leesburg	December 21–22	350	55 00	
		Lynchburg	January 25–26	200	45 45	
Hocking	24,398	Laurelville	February 3–4	350	80 00	73 19
		Logan	February 13–14	300	49 65	
Holmes	19,511	Holmesville	February 8–9	400	56 00	58 53
Huron	32,330	North Fairfield	December 28–29	200	31 75	96 99
		Wakeman	January 2–3	150	29 80	
		Greenwich	January 20–21	375	29 93	
Jackson	34,248	Camba	December 12–13	200	20 85	102 74
		Cove	December 30–31	200	34 00	
		Jackson	January 18–19	200	34 20	
Jefferson	44,357	Smithfield	December 14–15	250	110 21	125 00
		Mt. Pleasant	February 15–16	300	81 45	
		Richmond	February 24–25	650	130 00	
Knox	27,768	Centerburg	January 23–24	350	45 00	83 30
		Democracy	February 6–7	350	41 00	
Lake	21,680	Perry	December 28–29	100	21 00	65 04
		Painesville	January 20–21	300	32 52	

Lawrence	39,534	Wilgus	December 5–6	350	45 80	118 60
		Labelle	January 2–3	150	34 48	
		Ryansville	January 30–31	175	18 00	
Licking	47,070	Utica	December 7–8	60	38 85	125 00
		Croton	December 28–29	350	31 25	
		Brownsville	February 1–2	300	41 35	
		Alexandria	February 17–18	450	42 45	
Logan	30,420	West Mansfield	January 20–21	425	42 13	91 26
		Degraff	February 20–21	800	45 63	
Lorain	54,857	North Ridgeville	December 19–20	200	37 00	125 00
		Columbia Center	January 4–5	450	37 90	
		Rochester	January 6–7	300	31 25	
		Pittsfield	February 15–16	200	25 20	
Lucas	153,559	Sylvania	December 12–13	350	31 25	125 00
		Java	January 6–7	350	31 25	
		Holland	February 6–7	450	31 25	
		Waterville	February 20–21	450	31 25	
Madison	20,590	London	February 10–11	400	34 50	61 77
		Plain City	February 22–23	275	33 95	
Mahoning	70,134	North Jackson	December 5–6	40	31 25	125 00
		North Lima	January 2–3	350	31 25	
		Berlin Center	January 25–26	200	31 25	
		Canfield	February 15–16	250	31 25	
Marion	28,678	Waldo	January 16–17	275	29 06	86 03
		Caledonia	January 23–24	200	19 70	
Medina	21,958	Hinckley	January 6–7	200	35 69	65 87
		Malletcreek	February 3–4	225	21 94	
Meigs	28,620	Chester	December 9–10	200	28 50	85 86
		Racine	January 6–7	350	28 05	
		Dyesville	February 20–21	250	14 75	
Mercer	28,021	Coldwater	December 19–20	125	19 66	84 06
		Wabash	January 20–21	425	27 10	
Miami	43,105	Troy	December 16–17	200	85 12	125 00
		Bethel	December 30–31	150	31 25	
		Piqua	February 8–9	450	45 00	
		West Milton	February 20–21	600	70 00	
Monroe	27,031	Bealsville	December 5–6	350	81 09	81 09
Montgomery	130,146	Germantown	December 12–13	500	75 00	125 00
		Vandalia	January 18–19	450	39 40	
		Centerville	February 1–2	400	32 50	
		Brookville	February 22–23	530	71 93	
Morgan	17,905	Malta	January 25–26	100	11 05	53 71
		Chesterhill	February 10–11	300	26 85	
Morrow	17,879	Cardington	January 30–31	450	31 08	53 64
Muskingum	53,185	Rix Mills	December 9–10	300	32 57	125 00
		Norwich	January 4–5	200	44 40	
		Gaysport	January 23–24	400	31 25	
		Adamsville	February 3–4	300	31 25	
Noble	19,466	Summerfield	December 7–8	150	34 96	58 40
		Sharon	December 21–22	300	22 75	
Ottawa	22,213	Elmore	January 2–3	75	33 32	66 64
		Port Clinton	February 3–4	275	33 32	

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*Held at Highland by permission, in order to secure better hall accommodations

FARMERS' INSTITUTES HELD IN OHIO DURING THE SEASON BEGINNING DECEMBER 5, 1904, AND ENDING FEBRUARY 25, 1905—Concluded.

Counties.	Population.	Institutes Held.		Attendance Reported.	Local Expenses Reported by Societies.	Per Capita Allowance to Institute Societies Under the Institute Law.
		Where.	When.			
Paulding	27,528	Antwerp	December 23–24	40	$41 29	$82 58
		Haviland	January 16–17	250	41 25	
Perry	31,841	Glenford	December 23–24	350	31 84	95 52
		Sayre	January 6–7	200	31 84	
		Rehoboth	January 30–31	348	31 84	
Pickaway	27,016	Williamsport	January 18–19	475	40 52	81 05
		Ashville	February 1–2	500	37 12	
Pike	18,172	Piketon	December 28–29	200	52 81	54 52
Portage	29,246	Randolph	January 18–19	382	29 75	87 74
		Garrettsville	January 25–26	75	39 00	
Preble	23,713	Eaton	December 28–29	500	57 35	71 14
		Camden	February 24–25	500	37 25	
Putnam	32,525	Continental	December 21–22	450	42 30	97 57
		Rimer	February 1–2	350	32 52	
		Leipsic	February 17–18	690	70 76	
Richland	44,289	Lexington	December 5–6	300	25 25	125 00
		Butler	December 26–27	450	31 25	
		Adario	January 18–19	400	32 00	
		Lucas	January 25–26	200	26 20	
Ross	40,940	South Salem	December 19–20	300	60 80	122 82
		Bainbridge	January 16–17	166	57 55	
		Frankfort	February 6–7	300	100 55	
Sandusky	34,311	Bellevue	December 23–24	400	34 90	102 93
		Clyde	January 18–19	500	38 06	
		Fremont	February 1–2	800	36 75	
Scioto	40,981	Mt. Joy	December 26–27	65	8 00	122 94
		Haverhill	February. 1–2	250	41 10	
		Scioto	February 3–4	200	38 10	
Seneca,	41,163	Republic	December 30–31	200	30 87	123 49
		Fostoria	Janaury 4–5	500	62 84	
		Tiffin	January 20–21	800	54 40	
		Greenspring	February 10–11	450	44 60	

Shelby	,625	Sidney	December 23–24	145	36 25	73 87
		Jackson Center	February 22–23	225	36 93	
Stark	94,747	Justus	December 7–8	155	30 05	125 00
		Marlboro	December 16–17	350	40 55	
		New Berlin	January 2–3	200	31 00	
		Alliance	January 20–21	350	29 50	
Summit	71,715	Inland	December 9–10	460	31 95	125 00
		Ghent	January 4–5	250	60 00	
		North Springfield	January 16–17	300	33 71	
		West Richfield	January 30–31	250	30 51	
Trumbull	46,591	Hartford	December 7–8	130	31 25	125 00
		Churchill	January 4–5	175	31 66	
		Newton Falls	January 23–24	250	31 25	
		Mesopotamia	February 17–18	150	31 25	
Tuscarawas	53,751	Sugarcreek	December 5–6	350	31 25	125 00
		Winfield	January 4–5	300	31 25	
		Tuscarawas	January 23–24	325	31 25	
		Midvale	February 22–23	165	31 25	
Union	22,342	Richwood	January 18–19	400	33 51	67 03
		Marysville	February 3–4	480	34 14	
Van Wert	30,394	Venedocia	December 26–27	300	28 91	91 18
		Van Wert	January 18–19	800	104 31	
		Convoy	February 13–14	400	30 39	
Vinton	15,330	Wilkesville	December 14–15	200	18 25	45 99
Warren	25,584	Morrow	February 3–4	400	65 00	76 75
		Waynesville	February 17–18	400	38 37	
Washington	48,245	Elba	December 19–20	160	31 45	125 00
		Lowell	January 27–28	350	26 60	
		Bartlett	February 8–9	275	31 25	
		Watertown	February 24–25	300	31 25	
Wayne	37,870	Creston	January 16–17	300	38 93	131 61
		Lattasburg	January 27–28	300	36 54	
		Wooster	February 10–11	600	35 00	
Williams	24,953	West Unity	December 28–29	250	19 90	74 86
		Bryan	February 10–11	200	23 00	
Wood	51,555	Grand Rapids	December 14–15	450	66 17	125 00
		Tontogany	January 4–5	250	23 00	
		Bloomdale	January 30–31	500	41 66	
Wyandot	21,125	Upper Sandusky	December 21–22	700	37 17	63 37
		Sycamore	February 6–7	650	29 54	
	4,157,545			80,508	$9,412 84	$8,373 81

INDEPENDENT INSTITUTES.

Counties.	Institutes Held.		Attendance Reported.	Local Expenses Reported by Societies.
	Where.	When.		
Ashland	Polk	February 17–18	300	$28 00
Carroll	Magnolia	February 24–25	335	47 50
Clark	Springfield	January 21	500	20 80
Clermont	Amelia	February 15–16	500	91 24
	Milford	February 15–16	175	50 00
Coshocton	Keene	February 1–2	250	25 00
Cuyahoga	North Royalton	February 22–23	250	42 43
	Euclid	February 27–28	170	66 19
	Warrensville	February 28	350	29 76
Fairfield	Pleasantville	January 6–7	350	115 60
	Carroll	February 17–18	400	47 65
Fulton	Wauseon	February 24–25	500	27 05
Guernsey	Cambridge	January 6–7	500	30 00
Hancock	Rawson	February 22–23	350	46 60
Harrison	Freeport	January 20–21	250	75 00
Huron	Townsend	January 20–21	500	35 50
	Monroeville	Feb. 28–March 1	75	57 00
Knox	Fredericktown	January 18–19	200	45 00
Licking	Jersey	January 12–13	300	46 70
Logan	Rushsylvania	December 26–27	140	30 00
	East Liberty	January 13–14	275	38 70
	Bellefontaine	February 15–16	300	70 00
Madison	West Jefferson	February 17–18	275	15 50
Medina	Chatham	January 13–14	275	70 21
	Poe	January 30–31	250	99 37
Meigs	Rutland	March 10–11	375	25 95
Mercer	Neptune	January 23–24	300	27 57
	Fort Recovery	February 24–25	300	52 00
Morrow	Johnsville	January 27–28	300	35 00
Muskingum	Chandlersville	January 6–7	280	62 11
	New Concord	January 12–13	270	66 16
Perry	Unity	December 15–16	140	15 00
Pickaway	Tarlton	February 24–25	125	32 00
Preble	Eldorado	January 25–26	475	35 35
	West Manchester	February 20–21	700	42 50
Williams	Montpelier	January 25–26	250	60 00
Wood	Bowling Green	February 21–22	200	26 35
Wyandot	Carey	February 22–23	600	82 24
			12,085	$1,813 03

RECAPITULATION.

1.	Amount collected by the State Board of Agriculture from the three mills per capita tax from the eighty-eight (88) counties of the state, in all of which institutes were held	$ 8,373.81
2.	Amount available for paying local expenses of two hundred and forty-three (243) institute societies, from the three mills per capita tax from the eighty-eight (88) counties of the state, in all of which institutes were held	$ 8,373.81
3.	Amount expended by the State Board of Agriculture in aid of two hundred and forty-three (243) county institutes for lecture work	$ 8,004.62
4.	Amount expended by county societies for expenses of two hundred and forty-three (243) institutes held	$ 9,412.84
5.	Total expenses of regular institutes	$17,417.46
6.	Average expenditures per institute, by State Board of Agriculture for lecturers	$32.94
7.	Average expenditures, per institute, by societies	$38.74
8.	Total average expenses per institute	$71.68
9.	Total average number of persons in attendance at two hundred and forty-three (243) institutes held	80,508
10.	Average number of persons in attendance at each	331
11.	Number of independent institutes reported	38
12.	Expenses of thirty-eight (38) independent institutes	$1,813.03
13.	Average expense of thirty-eight (38) independent institutes reported	$47.71
14.	Total average number of persons in attendance at thirty-eight (38) independent institutes	12,085
15.	Average attendance at each of thirty-eight (38) independent institutes	318

LECTURERS

EMPLOYED BY

THE OHIO STATE BOARD OF AGRICULTURE

For the Institute Season of 1904--1905 with Postoffice Addresses and Topics.

F. L. Allen, Kinsman, Trumbull County, Ohio.

1. A Study of Soils and the Problem of Fertility:
    - (a) The Origin, Composition, Kinds and Functions of Soils. Thirty minutes.
    - (b) Soil Water; Drainage. Thirty minutes.
    - (c) Conservation of Moisture. Thirty minutes.
    - (d) Humus; Soil Bacteria and Tillage. Thirty minutes.
    - (e) Manures and Fertilizers. Thirty minutes.
2. The Home Mixing of Fertilizers. Twenty-five minutes.
3. Silos and Silage. Twenty-five minutes.
4. In the Dairy. Twenty-five minutes.
5. Machinery on the Farm. Twenty-five minutes.
6. Maple Creek Farm. Twenty minutes.
7. Ohio Forests. Twenty-five minutes.
8. Some Profitable Investments. Forty minutes. Night.
9. The American Farmer. Forty minutes. Night.
10. The Farmer's Pocketbook. Forty minutes. Night.

S. J. Baldwin, R. R. 19, Tallmadge, Summit County, Ohio.

1. The Corn Crop. Thirty minutes.
2. Silos and Silage. Thirty minutes.
3. Feeds and Feeding. Thirty minutes.
4. The Winter Dairy. Forty minutes.
5. Commercial Fertilizers. Forty minutes.
6. Some of Our Insect Friends. Twenty minutes.
7. Some of Our Feathered Friends. Twenty minutes.
8. The Business Farmers. Twenty minutes.
9. The Evolution of the Farmer. Sixty minutes. Night.
10. Origin and Course of Storms. Sixty minutes. Night.
11. When the Earth Met a Comet, or the Great Glacier and Its Effects. Sixty minutes. Night.

John Begg, R. R. 1, Columbus Grove, Putnam County, Ohio.

1. Modern Ideas in Corn Culture. Twenty-five minutes.
2. Suggestions on Growing and Caring for Wheat. Twenty-five minutes.
3. A Few Thoughts on Potato Culture. Twenty minutes.

4. Swine Husbandry; How Best Conducted. Thirty-five minutes.
5. The Problem of Growing and Feeding Cattle. Forty minutes.
6. Barnyard Manures; Their Use and Abuse. Twenty minutes.
7. Tile Drainage as a Factor in Farming. Thirty minutes.
8. Care and Treatment of Our Soils. Thirty minutes.
9. Landlord and Tenant. Forty-five minutes. Night.
10. Should Farmers Organize; If So, Why? Fifty minutes. Night.
11. Sunshine and Shadow in Farm Life. Sixty minutes. Night.

Frank Blackford, Eldorado, Preble County, Ohio.

1. Crop Rotation. Twenty minutes.
2. The Corn Crop. Twenty-five minutes.
3. Soil Improvement. Twenty-five minutes.
4. Drainage, Humus, and Tillage. Twenty-five minutes.
5. Forest Farming. Twenty-five minutes.
6. The Farmer's Garden and Orchard. Twenty-five minutes.
7. Commercial Fertilizers. Twenty-five minutes.
8. Scientific Agriculture, or What We Owe the State. Thirty minutes.
9. The Hog. Twenty-five minutes.
10. The Milch Cow in the Corn Belt. Twenty-five minutes. Night.
11. Some Mistakes Current Among Farmers. Thirty minutes. Day or Night.
12. The Farmer as a Business Man. Thirty minutes. Day or Night.
13. The Farmer's Home. Thirty minutes. Night.
14. Opportunities for Social Life, and Culture Open to the Farmer. Thirty minutes. Night.

J. S. Brigham, Bowling Green, Wood County, Ohio.

1. Some Profitable Crops. Twenty-five minutes.
2. The Potato Crop. Twenty minutes.
3. Celery Culture. Twenty minutes.
4. How to Grow Melons. Twenty minutes.
5. Growing Vegetables Under Glass. Twenty-five minutes.
6. Success in Preparing and Marketing Produce. Twenty-five minutes.
7. The Farm Garden. Twenty-five minutes.
8. Some Points in Using Manure and Cultivation. Twenty-five minutes.
9. Possibilities of the Small Farm. Twenty-five minutes.
10. Some Points for Ambitious Boys. Thirty minutes. Day or Night.
11. Reading: Its Influence in the Farm Home. Twenty-five minutes. Day or Night.
12. What Can Organization Do for the Farmer? Thirty minutes. Day or Night.
13. Life on a Texas Cattle Ranch. Forty minutes. Night.

W. I. Chamberlain, Hudson, Summit County, Ohio.

1. Potatoes on Clayey Soils. Twenty minutes.
2. Money in Apples. Thirty minutes.
3. The Theory and Practice of Rotation. Twenty minutes.
4. The Principles of Tile Drainage. Twenty minutes.

5. Facts About Fertilizers. Twenty minutes.
6. The Winter Care of Cattle. Twenty minutes.
7. The Principles of Barn Building. (Illustrated.) Twenty minutes.
8. The Twentieth Century Farmer. Fifty minutes. Night.
9. The Debt We Owe Our Children. Fifty minutes. Night.

William M. Cook, R. R. 3, Camden, Preble County, Ohio.

1. Crop Rotation. Twenty-five minutes.
2. Sorghum; Care and Value as a Winter Feed. Twenty-five minutes.
3. Soil Improvement. Twenty-five minutes.
4. The Practical Use of Commercial Fertilizers. Twenty-five minutes.
5. The Possibilities of Scientific Agriculture. Twenty-five minutes.
6. Short Cuts in Farming. Twenty-five minutes.
7. A Farmer's Telephone System. Twenty-five minutes.
8. Economical Hog Raising. Twenty-five minutes.
9. Hogs a Specialty on the Farm. Twenty-five minutes.
10. Making Ends Meet. Thirty-five minutes. Night.

F. A. Derthick, R. R. 2, Mantua, Portage County, Ohio.

1. Potatoes as a Side Line. Thirty minutes.
2. The Apple Orchard. Thirty minutes.
3. The Horse and His Corn. Thirty minutes.
4. Farm Conveniences. Thirty minutes.
5. The Ohio State Board of Agriculture. Thirty minutes.
6. The Ohio Agricultural Experiment Station. Thirty minutes.
7. Organization. Forty-five minutes.
8. Why I am a Farmer. Forty-five minutes. Night.
9. A Trip to New England via Niagara Falls. Forty-five minutes. Night.
10. A Trip to the Pacific Coast. Forty-five minutes. Night.

J. Al Dobie, R. R. 1, St. Johns, Auglaize County, Ohio.

1. Getting a Stand of Clover. Twenty minutes.
2. Some Objects of Cultivation. Twenty-five minutes.
3. Management of Tough Clay Soil. Thirty-five minutes.
4. Intensive Farming. Thirty-five minutes.
5. Taste in Farming. Twenty minutes.
6. A Plea for Better Feeding. Twenty-five minutes.
7. Some Points in Swine Husbandry. Thirty-five minutes.
8. Shall We Keep the Boy on the Farm? Twenty-five minutes. Night.
9. Looking Forward. (For young people.) Forty minutes. Night.
10. Ideals and Realities in Life. Forty minutes. Night.

R. W. Dunlap, Kingston, Ross County, Ohio.

1. Raising and Marketing a Corn Crop in the Scioto Valley. Thirty minutes.
2. Seven Years' Experience with Alfalfa. Twenty minutes.
3. (a)Experiments with New Crops. Fifteen minutes.
   (b)Experiments with Commercial Fertilizers. Fifteen minutes.
4. Effect of Food on the Quality of Milk. Fifteen minutes.
5. Cattle Feeding. Twenty minutes.

6. The Modern Draft Horse. Twenty-five minutes.
7. Animal Mechanics. (Illustrated.) Thirty minutes.
8. Tile Draining. Twenty minutes.
9. Operating a Thousand Acre Farm. Twenty-five minutes.
10. Miscellaneous Little Things. Twenty-five minutes.
11. County, State, and International Fairs. Twenty-five minutes.
12. Agriculture at the Ohio State University. Twenty minutes.
13. The Ohio State Board of Agriculture; The Grand Work it is Doing for the Farmer. Twenty minutes.
14. The Farmer's Duty. Thirty-five minutes. Night.
15. Citizenship. Forty minutes. Night.

W. G. Farnsworth, Waterville, Lucas County, Ohio.

1. How We Grow and Handle Potatoes. Twenty-five minutes.
2. Culture and Care of the Corn Crop. Twenty-five minutes.
3. The Culture of Fruit by the Farmer. Twenty-five minutes.
4. Growing Small Fruits Commercially. Twenty-five minutes.
5. Pruning Small Fruits and Orchards. Fifteen minutes.
6. How and When to Spray. Fifteen minutes.
7. Marketing our Produce. Twenty minutes.
8. How We Maintain and Increase Soil Fertility. Twenty-five minutes.
9. The Farmer's Team. Twenty minutes.
10. Mutual Fire Insurance for Farmers. Twenty-five minutes.
11. The Question of Help on the Farm. Twenty minutes.
12. The Work of Our Experiment Station. Twenty-five minutes.
13. Partnership on the Farm. Twenty-five minutes. Night.

G. C. Houskeeper, Bowling Green, Wood County, Ohio.
(Bell and Local Telephones.)

1. Growing and Marketing Potatoes. Twenty minutes.
2. Growing and Disposing of the Corn Crop. Twenty minutes.
3. What about Wheat? Fifteen minutes.
4. Why Rotate Crops? Twenty minutes.
5. Growing and Marketing Hogs. Twenty minutes.
6. Air, Rain, Frost, etc. (Illustrated.) Twenty minutes.
7. Fruits for Home Use. Twenty minutes.
8. Some Valuable Helps. (Illustrated.) Twenty-five minutes.
9. Advantages of Farming. Twenty minutes.
10. The Farmer and the Public School. (Illustrated.) Twenty-five minutes.
11. Reading for the Farmer and Family. Fifteen minutes.
12. In the Home. Twenty-five minutes. Night.
13. A Talk for Young People. Twenty-five minutes. Night.

A. H. Judy, Castine, Darke County, Ohio.

1. Cultivation, Care, and Marketing the Corn Crop. Twenty minutes.
2. Wheat; Oats; Straw. Twenty minutes.
3. Clover, Manure and Drainage. Twenty-five minutes.
4. Successful Tobacco Growing. Fifteen minutes.
5. Feeding Hogs for Profit; Summer; Winter. Twenty minutes.
6. Intelligence in Business. Fifteen minutes.

7. Making the Farm Pay. Fifteen minutes.
8. Managing an Eighty Acre Farm. Twenty minutes.
9. The Price of Success. Thirty minutes. Night.
10. Striving for Results. Thirty minutes. Night.

Charles McIntire, Chandlersville, Muskingum County, Ohio.

1. Some New Crops. Thirty minutes.
2. Corn. Twenty minutes.
3. When to Cut the Grass. Twenty minutes.
4. Principles of Feeding. Twenty-five minutes.
5. The Cattle for the Farmer. Twenty minutes.
6. Swine Feeding for Profit. Twenty minutes.
7. Horses. Thirty minutes.
8. How Can the Farmer Analyze His Own Soil? Twenty minutes.
9. Restoring Impoverished Lands. Twenty minutes.
10. Increasing the Effectiveness of Barnyard Manure. Twenty minutes.
11. The Ohio Agricultural Experiment Station, and How It Can Benefit the Farmer. Thirty minutes.
12. Agriculture in the Future. Thirty minutes. Night.

H. P. Miller, Sunbury, Delaware County, Ohio.

Factors in Crop Production—

1. The Soil.
2. Moisture and Ways of Controlling It.
3. Rendering Plant Food Available.
4. Manures; Saving and Applying.
5. Maintaining and Increasing Fertility.
6. Lessons from the Experiment Station.
7. The Feeding of Animals.
8. Counsels of a Shepherd.
9. Common Diseases of Animals, and Their Treatment.
10. The Education for the Boy and Girl of the Farm. Night.

Presentation of each of these will occupy thirty to forty-five minutes, to suit programs. It is desired that the first five be selected and presented in order given, using No. 3 for night session. Charts will be used in connection.

Carey W. Montgomery, R. R. 9, Newark, Licking County, Ohio.

1. Clover. Twenty minutes.
2. Potatoes. Fifteen minutes.
3. Melons. Fifteen minutes.
4. Soil Conditions Essential to Crop Production. Twenty minutes.
5. How Plants Feed and Grow. Twenty minutes.
6. Planting and Growing Fruit Trees. Twenty minutes.
7. The Farmer's Fruit Garden. Twenty minutes.
8. Marketing Produce. Twenty minutes.
9. Leaks on the Farm. Twenty minutes.
10. Fertilizers. Twenty minutes.
11. Rural Amusements. Twenty-five minutes. Night.
12. What Do We Owe to Our Community? Twenty-five minutes. Night.

Rei Rathbun, Box 102, Springfield, Clark County, Ohio.

1. Breeding the Grains. Twenty minutes.
2. Handling and Using Manure. Twenty-five minutes.
3. Use of Commercial Fertilizers. Twenty-five minutes.
4. Underdraining and Cultivation. Twenty-five minutes.
5. Some Educational Helps to Farmers. Twenty-five minutes.
6. Some "Snags" in Farming. Twenty minutes.
7. The Farmer's Interest in Local Forestry. Twenty minutes.
8. Feeding the Family. Twenty-five minutes.
9. The Up-to-Date Farmer. Thirty minutes. Day or Night.
10. Capital Limited, Shall I Buy a Small Place, or Rent a Larger One? Thirty-five minutes. Day or Night.
12. Home and Home-making. Thirty-five minutes. Night.

Ernest J. Riggs, Raccoon Island, Gallia County, Ohio.

1. Feeds, and the Compounding of Rations for Farm Animals. Fifteen minutes.
2. The Care and Management of Sheep on the Farm. Fifteen minutes.
3. The Farm Poultry. Fifteen minutes.
4. Horticulture as a Vocation. Twenty minutes.
5. Setting and Care of an Apple Orchard. Twenty minutes.
6. Buds and Budding. Fifteen minutes.
7. Scientific Spraying of Orchards. Fifteen minutes.
8. Only a Farmer. Thirty minutes. Night.

Lowell Roudebush, R. R. 1, New Richmond, Clermont County, Ohio.

1. Alfalfa. Fifteen minutes.
2. The Farmer's Garden. Fifteen minutes.
3. Noxious Weeds and How to Destroy Them. Twenty minutes.
4. Some Common Mistakes in Raising Poultry. Twenty minutes.
5. Why Farmers Should Raise Sheep. Twenty minutes.
6. Is it Profitable to Raise Horses; If So, What Class? Twenty minutes.
7. Feeding Stock for Profit. Twenty minutes.
8. Care and Management of Small Fruits. Twenty minutes.
9. The Outlook for Orcharding in Ohio. Fifteen minutes.
10. The Essentials in Spraying. Fifteen minutes.
11. Pear Blight and Peach Yellows. Fifteen minutes.
12. Canker Worm, Rose Chafer and Fruit-tree Bark Beetle. Fifteen minutes.
13. The San Jose Scale. Fifteen minutes.
14. The Codling Moth. Fifteen minutes.
15. The Hessian Fly. Twenty minutes.
16. Natural Enemies of Insect Pests. Twenty minutes.
17. What the United States Department of Agriculture is Doing for the Farmer. Twenty-five minutes.
18. Uncle Sam's Land of the Midnight Sun. Forty-five minutes. Night.
19. The Clouds; In and Above Them. Thirty minutes. Night.

George E. Scott, Mt. Pleasant, Jefferson County, Ohio.

1. Stay by the Corn Crop. Twenty-five minutes.
2. Clover Compared With Fertilizers. Twenty-five minutes.

3. Ensilage and Silos. Twenty-five minutes.
4. Is Dairying Profitable? Why? Twenty-five minutes.
5. Poultry for Health and Profit. Twenty-five minutes.
6. Benefits in Keeping Improved Live Stock. Twenty-five minutes.
7. What to Eat and Drink. Twenty-five minutes.
8. The Farmer and the Labor Problem. Twenty-five minutes.
9. Is the Telephone a Necessity to the Farmer? Twenty-five minutes.
10. Who Shall Follow in Our Footsteps? Forty minutes. Night.
11. The Nobility of Farm Life. Forty minutes. Night.

John L. Shawver, Bellefontaine, Logan County, Ohio.

1. Care in the Selection of Seed. Twenty minutes.
2. Clovers and Their Values. (Illustrated.) Thirty minutes.
3. Feeds and Feeding. (Illustrated.) Thirty minutes.
4. The Farmer's Fruit Supply. Twenty minutes.
5. The Farm Dairy. Forty minutes.
6. Making, Saving and Applying Manures. (Illustrated.) Thirty minutes.
7. Bugs, Birds and Bees. Thirty minutes.
8. Economical Uses of Portland Cement. Thirty minutes.
9. The Economy of Co-operation. Thirty minutes.
10. Household Conveniences. Twenty minutes.
11. Farm Buildings. (Illustrated.) Thirty minutes.
12. The Farmer's Table. (Illustrated.) Thirty minutes.
13. The Farmer as a Business Man. Thirty minutes.
14. Why Go to the City, Young Man? Thirty minutes.
15. The Education of Our Boys and Girls. Thirty minutes.
16. The Building of a Temple. (Requires the use of a blackboard.) Thirty minutes. Night.
17. Seedtime and Harvest. (A talk to young people.) Fifty minutes. Night.

E. P. Snyder, R. R. 1, Monroeville, Huron County, Ohio.

1. Wheat Growing and Marketing. Twenty minutes.
2. Seeding to Timothy and Clover. Fifteen minutes.
3. Shall We Keep Sheep? Twenty minutes.
4. Saving and Applying Barnyard Manure. Fifteen minutes.
5. A Farmer's Way With Strawberries. Fifteen minutes.
6. Small Fruits for the Farmer. Fifteen minutes.
7. A Few of the Possibilities of Farming. Twenty minutes.
8. Mutual Fire Insurance for Farmers. Fifteen minutes.
9. The Farmer's Relation to the Common School. Twenty minutes.
10. Vacations for Farmers. Thirty minutes. Night.
11. Lights and Shadows of Soldier Life. Thirty minutes. Night.

L. G. Spencer, R. R. 1, Latimer, Trumbull County, Ohio.

1. Potato Culture. Thirty minutes.
2. Hogs for Profit. Twenty minutes.
3. The Dairy Cow and Her Care. Thirty minutes.
4. Butter Making for a Home Market. Twenty minutes.
5. The Dairy Test at the World's Fair. Thirty minutes.
6. Small Fruits for the Small Farm. Thirty minutes.

7. Noxious Weeds. Twenty minutes.
8. The Silo; Its History and Construction. Thirty minutes.
9. One of the Problems on an Ohio Farm. Thirty minutes.
10. The Farm Home as a Factor in Our Nation. Forty minutes. Night.

S. E. Strode, R. R. 1, Pennsville, Morgan County, Ohio.

1. Points in Wheat Culture. Thirty minutes.
2. Clover on Ohio Farms. Thirty minutes.
3. Plant Food from Manures, Legumes and Commercial Fertilizers. Forty minutes.
4. Sheep on the Farm. Thirty minutes.
5. Winter Eggs for the Farmer's Table and Market Basket. Twenty minutes.
6. The Apple Orchard; Planting and Growing. Twenty-five minutes.
7. Making an Old Apple Orchard Profitable. Twenty minutes.
8. Problems in Hillside Farming. Thirty minutes.
9. Some Mistakes We Farmers Make. Thirty minutes. Night.
10. Shall the Boy Choose Agriculture for an Occupation? Forty-five minutes. Night.

M. C. Thomas, Mingo, Champaign County, Ohio.

1. Corn Growing. Twenty-five minutes.
2. The Value and Management of a Clover Seed Crop. Twenty minutes.
3. Some Essential Points in Successful Wheat Growing. Twenty minutes.
4. The Old and the New in Maple Syrup Making. Fifteen minutes.
5. Swine Management for Profit. Twenty minutes.
6. The Problem of Soil Fertility. Twenty-five minutes.
7. Cement Floors. Twenty minutes.
8. The Business Side of Farming. Twenty-five minutes.
9. The Ohio Agricultural Experiment Station and Its Value to the Farmer. Twenty minutes.
10. A Balanced Ration for the Farm Boy. Thirty minutes. Night.
11. An Enlightened Husbandry. Twenty-five minutes. Night.

C. R. Wagner, R. R. 15, Arlington, Hancock County, Ohio.

1. Sheep Husbandry; Its Sunshine and Shadow. Thirty minutes.
2. Live Stock Essential to the Highest Type of Agriculture. Thirty minutes.
3. Principles Upon Which Live Stock Breeding Rests. Thirty minutes.
4. Object and Principles of Live Stock Feeding. Thirty minutes.
5. The Manure Supply; Making, Saving and Applying. Thirty minutes.
6. Mutual Insurance for the Farmer. Twenty-five minutes.
7. The Agricultural Fair. Thirty minutes.
8. Our Agricultural Experiment Station. (Illustrated.) Thirty minutes.
9. The Boy and the Farm. Thirty-five minutes.
10. Problems that Confront the Rural School. Thirty-minutes.
11. The Home; Its Influence and Surroundings. Forty minutes. Night.
12. The Power of Concentrated Thought and Action. Forty minutes. Night.

R. H. Wallace, Chillicothe, Ross County, Ohio.

1. Feeding for Profit. Thirty minutes.
2. Heredity in Animal Life. Thirty minutes.
3. How to Treat Worn-out Soils. Twenty-five minutes.
4. Skill in Farming. Twenty-five minutes.
5. The Farm Dairy. Twenty-five minutes.
6. Will the Future King of the Farm Be Cotton, Corn or Wheat? Twenty five minutes.
7. The Relation of the Farm to the Factory and the Commercial World. Thirty-five minutes.
8. What Change Is Needed in Our System of Taxation? Twenty minutes.
9. State Board of Agriculture and Farmers' Institutes. Twenty-five minutes.
10. What Shall Be Done With the Surplus of the Farm? Thirty-five minutes. Night.
11. The Sowing and the Reaping. Forty minutes. Night.
12. What Constitutes the Farmer's Education? Forty minutes. Night.
13. Prehistoric Races of This Country. Forty minutes. Night.

PAPERS READ AT
FARMERS' INSTITUTES, 1904-1905.

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SOIL STUDY.

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It is a truism that the prerequisite to success in any business or professional undertaking is a good, solid, well-constructed foundation. In one instance it may be of an intellectual character, a thorough knowledge of the details of that business or profession, or it may be of a material nature, as a solid, well-constructed roadbed is a prerequisite to a successful railway line. It is to this latter class that belongs the prerequisite to successful agriculture, a fertile soil. Of course, there are other essentials, but other things being equal that farmer will meet with the greatest degree of success who is blessed with a fertile, hence a productive soil.

It shall be my aim in this brief paper to give as far as possible the facts in regard to the origin and composition of soils, the agencies which have been most active in soil formation, and a few hints as to plant food and the maintenance of soil fertility.

It is not an absolute necessity that the farmer know all the elements that enter into the chemical composition of soils or that he know in just what proportion the elements exist which determine the mechanical condition of a soil, nevertheless the origin and composition of soils present an interesting field of study. A great many of our farmers are not as familiar as they should be with the origin of soils. It is still believed by some that the soil which we till served as a covering of the earth when it was formed, but this idea is erroneous, as it has become what it is by a slow process. Soil was formed and is constantly being formed by disintegration and rotting down of rock under the slow action of the atmosphere. The active ingredients of the air in this process are oxygen, carbonic and acid and water as vapor or moisture. Rain water which contains these ingredients, is therefore, the most active agent in soil formation. If water, the chief agent of decomposition, were limited in its action to the surface of the rock the process would indeed be much slower than it is, but fortunately all rocks are affected with joints in several directions; water, therefore penetrates to great depths, attacking the surface of each block, which in turn is affected by fissures through which the water penetrates, thus greatly increasing the surface exposed to disintegrating agencies. The above, which is a chemical action of the elements upon the rock, can easily be illustrated by taking a piece of mortar, placing it in hydrochloric acid which dissolves the lime that hold the grains of sand together and the whole mass crumbles. In all rocks some parts are soluble in water and some are not, thus by the continued action of this agent the soluble parts are dissolved while the insoluble portions break down into powder. The difference between the two processes is that the former is rapid while the latter is very slow. In cold climates water also exerts a mechanical action by entering the joints and fissures, where, freezing, it expands and bursts asunder the rock, thus greatly increasing the rapidity of soil formation.

Proofs of this mode of formation are shown most clearly in those cases where the soil still remains resting on the rock from which it was formed. These cases are, however, very rare in the northern part of our country, as the soil has been shifted during a period known as the "drift period." They are clearly shown in the southern part of the United States or in the southern counties of our own state where the soil has remained undisturbed for ages.

By observing the sections made by a railway cut we find at the surface a perfect soil, just below, perhaps, it becomes lighter colored and coarser grained, then begins to look like rotted rock, and gradually passes into sound rock. The evidence is still more complete if the rock chances to be traversed by a vein of more enduring rock, which has withstood the action of the atmospheric agencies, when it can be traced to near the surface.

But we need not go out of our own community to see the process of soil formation going on. Rocks which originally had sharp edges have been worn smooth and at places where the rock outcrops at the base of the cliffs may be found piles of rock and fragments in different stages of decay. The depth and kind of soil depends upon the kind of rock from which it was formed. The depth is also influenced by the rapidity with which it is removed by soil washing. Soil removal is effected by surface water and by streams. Surface water carries it from the highlands to the lowlands and deposits it or carries it into the stream, which in turn carries it to the ocean or during an overflow deposits it over the valley through which it flows.

During a period known as the "glacial epoch," the whole northern section of the United States was covered by a huge glacier which extended as far south as 40 to 38 degrees north latitude, carrying with it vast areas of soil and depositing it along its path. The terminal moraine of this glacier may be traced through Ohio, passing through Columbiana, Stark, Wayne, Richland, Holmes, Licking, Fairfield, Ross, Highland, Adams and Brown counties and crossing the Ohio River into Kentucky from the latter county. This gives to the state a variety of soils adapted to a wide range of crops. The average depth of this drift in Ohio is about one hundred feet, but in some sections it attains a depth of over five hundred feet.

The chemical elements of a soil which are essential to plant growth and which are of most interest to the farmer are ten in number, namely: Nitrogen, potassium, phosphorus, magnesium, sulphur, sodium, iron, chlorine, silicon and calcium.

The mechanical components of the soils of Ohio are found chiefly in sand, silt and clay. Those soils containing high percentages of sand will be loose and open; those with less sand are called loamy; those containing high percentages of silt will pack quickly under rainfall and may become hard, while those containing much clay will be plastic, retentive of moisture and likely to become cloddy in working. From the above it will be seen that the physical character of a soil is an important factor in determining actual fertility. This has reference, first, to the original character of the rock from which the soil particles were derived, whether hard and dense in their mineral character, thus resisting the penetration and solvent effect of air and water and other agencies, or soft and friable, and freely permitting their entrance and action; and, secondly, whether in the formation of the soil the particles were so fine and so free from vegetable matter as to settle in hard and compact masses impervious to water, air and warmth, or whether they were coarse and not capable of close compaction, thus giving rise to an open friable soil, freely admitting the active natural agencies which are so necessary to plant growth, for the free circulation of the air and water through the soil is necessary that they may dissolve and make available the plant food and carry it to the plant.

The temperature of the soil and of the surrounding atmosphere must not be too high or too low, thus preventing the progress of those changes which must go on, both in the soil and in the plant that the normal growth and development may be accomplished. Then the great importance of adding vegetable matter or humus to a soil is to give body to a light, sandy soil, leaving it less porous, enabling it to retain a greater amount of moisture, thus keeping a larger proportion of the plant food within reach of the plant roots; to make a cold, compact clay, or other soil of similar nature loose and friable, allowing a free circulation of air and water, increasing its moisture containing capacity, allowing less rainfall to run from the surface; by its decomposition to raise the temperature of these cold soils.

When the earth was formed it is thought that the chemical elements were more uniformily distributed throughout its crust than they are at present, owing to changes that have taken place by the removal of soils from their place of formation and their deposition at other places.

The mechanical components have become separated and deposited, the coarser first, forming sand, then the finer forming clay, and perhaps lime in another forming limestone soil; all differing from each other in the amounts and proportions of the essential fertilizing constituents contained, as well as in their physical qualities. The sandy, gravelly soils being the poorest are usually deficient in phosphoric acid and potash and not rich in nitrogen; clay soils are frequently rich in minerals containing potash and poor in those containing lime and phosphoric acid. Limestone soils are usually deficient in potash and rich in lime and phosphoric acid. Those soils composed largely of vegetable matter are rich in nitrogen and deficient in all the mineral elements. Hence it is that in the use of commercial fertilizers a knowledge of the soil is important and that we may supply those that are needed in that type of soil. Perhaps the best method of learning the element or elements that give us the largest increase in crop production is by experiment with the different elements of plant food upon the growing crop.

Of the ten chemical elements necessary to plant growth all are found in most soils in sufficient quantities with the exception of three or at the most, four, namely: Nitrogen, phosphoric acid, potash and lime. These are liable to become exhausted because they exist in larger quantities than the others in the plants grown and in smaller amounts in the most fertile soil. Nitrogen in its simple form is a gas and as such cannot be used in fertilizers. Therefore, when we speak of nitrogen in fertilizers we do not mean that it exists as simple nitrogen, but in combination with other elements, perhaps in different forms, as nitrate of soda—which is nitrogen combined with soda; as ammonia, which is nitrogen combined with hydrogen, or it may be in the form of organic matter.

The function of nitrogen is to grow the stems and leaves of plants, and an abundance is indicated by a luxuriant growth of these parts and a deepened color of the foliage. Potash is essential to the formation of starch in plants. Starch is first formed in the leaves of plants after which it becomes soluble enough within the plant cells to pass through the cell walls and is carried to the fruit of the plant where it accumulates and changes back to its insoluble form. Potash exerts an important influence on the development of the woody parts of stems and the fleshy parts of fruit.

Experiments have proven that plants will die before reaching maturity unless they have phosphoric acid to feed upon. Phosphates perform three functions. They aid in the nutrition of plants by supplying the needed quantities of phosphoric acid. They aid the plant to assimilate or make use of the other ingredients and are found chiefly in the seeds of plants. A plant does not mature and so does not produce seed unless phosphates are present in the soil in an available form. Certain forms of phosphates render the albumoinoids sufficiently soluble to enable them to be carried from the growing parts of the plant to the seed where they accumulate.

The function of lime is to improve the mechanical condition of soil, by loosening heavy clay soils and by holding together and giving body to light sandy soils. Lime aids in the decomposition of animal and vegetable matter and tends to convert them into available plant food. Therefore, care should be taken to use it with or in connection with fertilizers. Lime serves an important purpose in correcting the acidity of soils. I would like to add that several years ago I had the pleasure of testing samples of the different soil types found in Green township with litmus paper and found all the samples which I tested to be quite acid; therefore, I believe that the farmers of this section would be benefited by the use of lime.

Plant food as used on most farms is obtained from three sources, namely: legumes or nitrogen gatherers, farmyard manures and commercial fertilizers. The nitrogen gatherers belong to the legume or clover family and the distinguishing features of plants of this order are that their seeds are formed in pods or legumes and they have the power of acquiring at least part of their nitrogen from the air. In order that the plant may obtain its nitrogen from the air the soil must originally contain or must be inoculated with a germ, the presence of which is manifested by the growth of nodules on the roots, through which it is believed the nitrogen is obtained. The nitrogen thus introduced into the soil is in a very good form, that is, it readily decays, and thus supplies the needs of other plants.

But it must be remembered that the helpful additions to the soil are limited to organic matter and nitrogen, and the usefulness of the crop will depend upon the available mineral elements in the soil or on those supplied.

Farm manures add directly to the fertility of a soil by supplying all three elements of plant food in the organic form which must be broken down by decay, thus gradually liberating the plant food which they contain. Besides supplying the elements of plant food, farm manures serve another purpose, as do the legumes, that of supplying organic matter, which by its decay renders available some of the plant food already in the soil. and, as before mentioned, they greatly affect the physical condition of the soil.

Commercial fertilizers, on the other hand, in most cases supply only the elements of plant food and may not leave a beneficial effect upon the soil. Rock phosphate, for instance, as a carrier of phosphoric acid does not leave the soil in as good a condition to grow such crops as clover as does steamed bone. The rock goods are manufactured from phosphatic rock, which does not contain organic matter and which when finely ground is treated with sulphuric acid to render the phosphoric acid available, while steamed bone is an animal product and does not undergo the acid treatment which may account for its better effect.

By practicing the following rules, the fertility of the soil can be maintained and increased:

By keeping the ground covered with some growing crop there is little loss of plant food. By proper crop rotation the exhaustion of plant food is lessened. By the use of legumes, nitrogen, the most costly element of plant food, may be obtained from the air. By better tillage and more tile draining the soil may be kept in good condition. By the intelligent purchase and use of commercial fertilizers fertility may be maintained. Most important of all, by marketing the products of the farm as far as possible through the medium of live stock and by care in saving and handling the manure, the greater part of the fertilizing elements may be returned to the soil.

The loss occasioned by the improper care of manure is enormous. It is estimated that if one-tenth of the present waste were avoided the amount of plant food saved would be more than equivalent to the amount purchased in the form of commercial fertilizers. Those interested in the study of fertilizers will find Professor Voorhees' book on that subject helpful. Bulletin No. 750 of the Ohio Experiment Station on "Ohio Soil Studies" will also be helpful to those interested along that line.

GROWING CLOVER.

BY WILLIAM C. COOMBS, LINDALE, OHIO.

[Read at the Farmers' Institute held at Laurel, Clermont county, January 4 and 5, 1905.]

You have doubtless all been advised to grow clover as a means of enriching your land. I have heard it from my boyhood up. All the agricultural books and papers are full of it. Judging from all that is said and written about it, growing clover must be a good thing—too good a thing for you or me to fail to get.

Yet how many of you have really succeeded in growing enough clover to have derived any marked benefit from it? If I were to visit all the upland farms within a few miles of this place, and look into all your barns, how many good mowfuls of clover hay would I find? Occasionally, by a combination of favorable circumstances or by special and expensive preparation, you have had a field of good clover, but perhaps it would be years before you got another one. You have bought high priced seed nearly every year, and found it hard to pay for, and yet failed in most cases to realize any adequate return for your investment. Why is this? Is it possible that our upland farms will not grow clover, and is it true that we must forego the advantages that are said to result from it? If such advantages as are claimed follow the growing of clover, and it can be grown on our upland farms, we ought to raise it, we can not afford not to do it. If this paper shall help my fellow farmers to grow clover successfully and they actually do it on their farms, then my object shall have been accomplished, and I shall be satisfied. You will also doubtless excuse me for simply giving my personal experience. A relation of what has been successfully done, is often of more value than a theoretical showing of what might be done.

About twelve years ago, on account of failure of health, scarcity of help and other causes, I found my land very much impoverished, mostly farmed by tenants, and yielding very little income. Corn was a light crop, wheat could only be grown on specially prepared ground, and timothy meadows were almost entirely run out. Clover seed had been sown almost every year, but seldow produced a crop. What the hot sun and dry weather after harvest spared, was generally finished by the frosts of winter. I had about as poor a prospect for growing wheat and clover as you can find on any farm around here.

Encouraged by returning health, and the help of two good boys who had fiinished their course in the high school, I gradually dismissed the renters. The tillable land was divided into three nearly equal parts, of about twenty acres each. A short rotation was adopted and peristently followed—corn, wheat, grass—one year to each. Commercial fertilizer was used on the wheat every time—seldom on any other crop. At first we sowed on the wheat a mixture of timothy and clover, but when the chinch bugs came, it was found that they would kill the timothy and not the clover, so after this clover alone was sown, and greatly to our advantage. Manures were spread, as nearly as possible fresh from the stables, on either the young clover or on the clover sod which was to be plowed for corn in the spring. Each division was thus handled in succession —corn, wheat, clover, one crop of each.

What is the result? Clover, instead of being counted on as one of the most uncertain crops, is now counted on with as much certainty as the others. The amount of live stock kept on the farm has been largely increased, yet we have not been able to keep all the stock necessary to eat the feed produced, and for several years we have found it necessary to dispose of considerable quantity of clover hay every spring, which our neighbors seem glad to get at good prices. A look into our mows would satisfy you that we do grow clover.

But, some of you may say, what was there in all this to make clover grow better than it did before? First, clover stands the drought and freezing better when grown on the firm soil of the wheat field. It also gets the benefit of the fertilizer put in with the wheat. Second, the clover was sown early, in February or March, so that the freezing and thawing bedded the seed firmly in the soil and gave it an early start. We were careful about drainage. Our land was back-furrowed in strips about two and a half rods wide and the dead furrows kept open. After drilling the wheat, the dead furrows were run out with a light plow and finished with a hoe if necessary. Lastly, we had adopted a rotation and stuck to it. Many of our first crops were very thin, but we did not get discouraged and stop.

What of the other crops? A steady and very gratifying increase. A look into our corn cribs, and wheat bins, or a comparison of our crops with those of our neighbors, or with the yield when we first began our rotation, would give abundant proof that our ground is increasing in fertility, although our crops are far from perfect, or what we yet expect them to be.

Why not try the same plan on your own land? Few, if any, have a more unpromising prospect than I had. You will succeed if you will stick to it. If your farm is small, or you are afraid to venture, try it on a smaller scale. If you can set aside only fifteen acres, you can have five acres of corn, five acres of wheat, and five acres of clover each year. If you can put 30 acres into the rotation so much the better; this will give you ten acres of each crop each year and your land will grow better. You will have some failures, but with perseverance you will find that you can grow clover with profit, and at the same time increase the productiveness of your farm.

How does the growing of clover improve land?- First, in common with all grasses by improving the mechanical conditon of the soil, making it more easily worked, enabling it to hold and retain more moisture for the growing plant, and by the growth and decay of rootlets adding the much needed humus to the soil. The roots of clover also penetrate deeper than most grasses, bringing up fertility from lower depths. But the chief advantage is in the ability of clover to draw nitrogen from the atmosphere and fix it in the soil as available plant food. It is becoming generally known among farmers that plants cannot grow, unless the plant food, or the material out of which plants are made is in the soil, and in a shape to be available. When you buy commercial fertilizer it is to add to the soil either nitrogen, phosphoric acid or potash for the use of the plant and without which the process of growth cannot go on. You generally buy nitrogen under the name of ammonia as that is a compound containing nitrogen. It is the most expensive ingredient of fertilizers, and is generally deficient in all worn soils, but there are inexhaustible supplies of it in the air which we breathe. Clover has the power to draw this nitrogen from the air and fix it in the soil in a form available as plant food. Only clovers and the plants of the class to which they belong have this power. It is an interesting discovery of the last few years, that they do this by the help of certain bacteria, or minute parasites, which live within the plants, and whose nests or breeding places are on the roots forming small tubercles or enlargements. If these bacteria are absent or deficient, but little, if any, nitrogen will be added by growing clover. Just now the United States Department of Agriculture is conducting some interesting experiments in inoculating soils with this nitrogen-gathering bacteria. Any of you who wish to test it may do so by making proper application to the Department.

What substitutes are there for clover? As I have before stated, all that class of plants to which clover belongs—called legumes—clover, alfalfa, beans, peas, and vetches—have the power of gathering nitrogen from the air. Owing to the difficulty so often experienced in growing clover, of late years, the growing of these substitutes has been very much advocated, but I have yet to find any upland farmer who has made any very decided success with either. Alfalfa is not adapted to all kinds of soils, it is a perennial and cannot be used in any ordinary rotation. Great hopes have been raised in regard to soy beans and cow peas, yet in this latitude they have not yielded satisfactory returns. The principal difficulties I have found are, that they require cultivation to keep them free from weeds and to promote growth. The ground has to be broken, the same as for other crops and a whole year lost in growing them. They are also difficult to harvest. Then, the roots do not penetrate and fill the ground as do the roots of clover.

With clover grown in the rotation I have described there is no extra breaking of the ground, no cultivation, or loss of time, no extra work, only sowing the seed, cutting and harvesting with ordinary harvesting machinery, and the results to the soil are more satisfactory. If you can grow clover, you certainly cannot afford to spend a whole year's time and much hard labor also, in growing cow peas or soy beans.

ALFALFA A BOON TO THE FARMERS.

BY WILL. H. PALMER, THURSTON, OHIO.

[Read at the Independent Farmers' Institute held at Jersey, Licking County, January 12 and 13, 1905.]

Although we may as yet consider alfalfa in the experimental stage in Ohio, it is one of the oldest of our forage plants. It is a native of the central districts of western Asia, having been found in an apparently wild state in the region to the south of the Caucasus and in several parts of Beluchistan and Afghanistan. In 470 B. C. it was introduced into Greece and it was in especial favor in that region as a forage plant in the first and second centuries and has been maintained in Italy down to the present time. From Italy it was introduced into France and Spain and at the time of the Spanish invasion was brought to Mexico. From Mexico it was introduced into South America and in 1854 it found its way into California from Chili. From here it has spread slowly eastward until at present it has been grown with more or less success in every state and territory from Maine to Washington and from Florida to California. The first introduction into the United States was in 1820 in New York, but the dissemination from this source has been practically insignificant.

Alfalfa, or lucern, is a perennial legume growing from one to three feet high. Its leaves are in three parts, each leaflet being broadest above the middle, narrowly oblong in outline and slightly toothed toward the apex. The purple, pea-like flowers instead of being in a head as in red clover are in a loose cluster or raceme. These racemes are scattered all over the plant instead of being borne, as in red clover, on the upper branches. The seed is about one-half large than red clover seed.

Alfalfa is a very deep feeder. The root system varies greatly, due to the soil in which it grows. Wherever the sub-soil is loose and permeable the tap root descends to great depth (eighteen to twenty feet and even fifty and sixty-six feet having been reported), but in those soils where the subsoil is less permeable it is comparatively shallow rooted. The young plant consists of a number of low branches springing from a simple basal stalk at the crown of the root. These branches ascend directly above ground and form a compact tuft. On the old plant, however, certain of the more robust stems elongate under ground and become new branch-producing stalks. In this way the simple stalk or rhizome, becomes two or many headed. When the stems are cut or grazed off the stalk dies down to the base and new buds spring up on the upper part or crown of the root and grow, forming new stems. If alfalfa is closely grazed and if every young stem is eaten off as rapidly as it appears the vitality of the roots will be impaired and the plant may die, because the growth comes directly from the root itself and not from the base of the old stem.

Alfalfa starts early in the spring and continues to grow until quite late in the fall. It grows very rapidly and once being established thrives for several years. Once established it should not be plowed up for at least six or eight years as it yields better the second year than the first, better the third than the second and so on until it is from six to ten years old. Report has it that alfalfa has been grown in some of the western states continuously in one field for from twenty to forty years, yielding good crops each year.

What are the conditions for the best growth and development of this plant? It grows best in light and sandy rich loam underlaid by a loose and permeable subsoil. The best conditions seem to be attained in the arid regions of the west where there is a light rainfall and the supply of water can be artificially controlled. Good drainage is one of the prime essentials to successful growing of alfalfa as the plants are quickly killed by an excess of water in or on the soil; especially is this true if it occurs in the winter time. Water must not be allowed to stand on a field of alfalfa more than twenty-four to forty-eight hours at a time as it will cause the plants to die and the roots to decay. The water table should not be too near the surface of the ground so as to interfere with the development of the root system, neither should it be too far below.

Alfalfa thrives in a variety of soils, but in this section it reaches its greatest perfection on the deep alluvial loams of the river and creek valleys where it usually finds the light warm soils in which it seems to delight. While it roots deeply it is not essential that the soil be of very great depth providing it contains plenty of plant food to maintain the young plant until it has become firmly established. The subsoil must be permeable and comparatively deep and moist. Mr. Wing, in a recent issue of the National Stockman and Farmer, says: "For alfalfa a clay soil, rather heavy, with a coating or two of barnyard manure will give splendid results if allowed to stand until the plants have become well rooted, say four years." A Kansas farmer having two hundred and eighty acres in alfalfa says: "It will grow on the poorest clay soil if the land is given a good coating of barnyard manure."

From these remarks it would seem that all that is necessary for growing a good crop of alfalfa is a liberal application of barnyard manure. If this were all, those who desire to grow this valuable plant would find it very easy, but there are several other factors that must be taken into account. One of these, acidity of the soil, is responsible for the greater number of the failures. Alfalfa like the other legumes will not grow in an acid soil. The acidity in the soil can be easily overcome by the liberal application of rock lime or, better, ground limestone which being alkali neutralizes the acid. For the best development of the plant the soil must not only be free from acid, but there must be present in the soil certain micro-organisms. These bacteria have the power to gather the free nitrogen from the air and are known as nitrifying bacteria. They are very essential to the growth of the plant and unless present in the soil should be supplied, as the plant will not thrive long without them unless the soil is exceptionally fertile. Without these bacteria the plant is as dependent upon the nitrogen in the soil as any other of our forage plants. How to supply these bacteria has been the question. In sections where the common sweet clover grows and thrives successfully there is no need of soil inoculation as the bacteria found on the roots of this plant have been proven to be identical with those on alfalfa roots. Although there may be a sufficient number of these bacteria upon the seed to effectively inoculate the soil and although we may supply the inoculation by the direct application of infected soil, the cheapest and most efficient agency is supplied by the government. At a cost of not to exceed four cents one may receive from the department at Washington a small cake containing millions of these bacteria. With each consignment full and explicit directions are given for the proper preparation of, and the best method of applying them to the soil.

In preparing to sow the farmer should not hesitate in thoroughly preparing the ground. He should plow the ground deep and save neither time nor money to get it in the very best condition possible. The first cost may seem very great, but when we stop to consider that we are planting something that remains for several years it seems not so much.

In this section of the United States alfalfa should be sown in the spring after all danger from frost has passed, say from the first of April to the fifteenth of May or even later. It is recommended to sow from fifteen to twenty or twenty-five pounds per acre. If it is for permanent pasture sow more than for meadow as the plants should be sufficiently close together so that the stems will be small and not woody. The most even stand is secured by sowing broadcast, covering the seed lightly with a light harrow or brush or, better, by the use of the roller. The United States Department of Agriculture recommends that on light sandy loams alfalfa be sown without a nurse crop while on clayey, cloddy soils a light crop of oats or barley is desirable. The latter is considered best as it is not quite as leafy and can be allowed to mature. One of the greatest enemies to the young alfalfa plant is the weeds which may come up in such numbers as to choke out the plant and it is for the purpose of keeping the weeds down that a nurse crop is used. If, therefore, we should allow the nurse crop to remain too long we have defeated its purpose and it in turn may be worse than the weeds which might have come up. If a nurse crop is used it should be cut early enough so as not to interfere with the growth of the young alfalfa plant. The alfalfa is sometimes cut for hay the first season, but its fitness depends greatly upon the rapidity of the growth during the first part of the season. It is essential that if weeds be present the field be mown frequently and raked off in order that the weeds may not get sufficient start to choke out the young plants which have not the power to hustle for themselves in such an unequal race. As a result of this frequent cutting the plant will develop a good root system and be better fitted for good growth the next year. The field should not be clipped too closely late in the fall as the plant will withstand the rigors of the winter better when of some size.

In regions where alfalfa will grow there is no better plant for hay. It yields more than any other of our crops, permitting of two, three and even four cuttings, each yielding from four to six tons per acre. It should be harvested as soon as the blossoms appear as it is at this stage that the protein content is the highest, the percentage of crude fibre is the lowest in and the quantity of leaves, the most valuable part of the plant, is the greatest. Experience and good judgment are required to make good alfalfa hay as it is very difficult to cure successfully owing to the nature of the plant. The loss of leaves during curing, due to careless handling, sometimes amounts to more than one-half the weight of the entire crop. After cutting it should be allowed to lie until well wilted when it should be raked up and placed into cocks where the principal part of the curing is done. The cocks should not be so large as to interfere with the free circulation of the air which should be permitted to get to all parts. When properly cured it does not must or mold in the mow or rick. The making of alfalfa hay is an art which must be learned by practice rather than by following directions. Much depends upon the weather as to the time required for curing. The value of the hay depends upon its being cured when in the fullest leaf. The hay is easily injured by moisture as a rain on it when in swath or cock often depreciates the value one-half.

Only passing mention need be made as to the cutting for seed as the production of seed will never play an important part in the industry of Ohio. When desiring to cut for seed the second cutting should be used as it ripens more uninformly and the yield is greater. Alfalfa yields from five to ten bushels per acre and good cleaned seed will bring on the market from three dollars to nine dollars and sixty cents per bushel.

Generally speaking alfalfa has all the good qualities of a forage plant and but few bad ones. It is not a perfect food because it is lacking in the carbonaceous material. It is when used with corn that it has its greatest usefulness. Director Jordan of the New York Experiment Station says: "Probably no species of forage plants are known that are more economical sources of high class cattle food than alfalfa and corn and if in the realm of stock raising corn is king alfalfa is queen." As reported by the same station, alfalfa yields more than either corn, red clover or timothy and by comparing the digestible dry matter we find that alfalfa possesses about one and three-fifths times as much as red clover, and two and one-fourth times as much as timothy. Comparing that most valuable of feeding elements, protein, we find that alfalfa contains almost twice as much as red clover and nearly four times as much as timothy. Alfalfa is considered an excellent fodder, being palatable and very nutritious. The Colorado Experiment Station has shown that a ton of alfalfa leaves is equivalent to twenty-four hundred pounds of wheat bran and taking the entire plant, the hay is worth about 86 per cent. as much as wheat bran. In other words if wheat bran is worth twenty dollars per ton alfalfa leaves are worth twenty-four dollars per ton and taking the entire plant the hay is worth seventeen dollars and twenty cents per ton. George L. Clothier, of the Kansas Experiment Station, in his investigations, in 1899, found that farmers using alfalfa hay considered that they could save from one-fourth to one-half in the amount of grain fed and that when it was used in the fattening of cattle there was a direct saving of from twenty to fifty per cent. Is there any good reason why we should not give this plant a trial? Although of great value to all classes of stockmen and farmers its greatest benefit is to the dairymen and shepherds. The fact that alfalfa can be grown very successfully in Argentina has made that country a very formidable rival with the United States in the sheep industry. Since the introduction of alfalfa into that country they are able to keep ten animals where but one could be kept before. Other things being equal meat and milk cannot be produced more cheaply than in those regions possessing a high adaptation for the growing of alfalfa.

Except for the damage to itself from trampling, alfalfa makes an excellent pasturage for horses and swine, but for ruminants it is not as safe as red clover until the animals become accustomed to its use. The danger from bloating or hoven is greatest when the stock is first turned into the meadow, when the plants are wet with dew, or when they are frosted.

If this plant was not possessed of all these good feeding qualities it would be a very valuable plant to grow because of its value as a soil renovator. Here we have a plant that not only produces a large amount of excellent and nutritious feed, but a plant that leaves the soil better off for having grown in it. The symbiotic relation existing between this plant and certain forms of bacteria makes it a very valuable plant to raise because these bacteria gather the free nitrogen from the air and in their life processes transform it into a form available to the plant. The method of growth improves the physical condition of the soil by opening up and aerating the lower layers of the soil. The deeply penetrating roots bring from the deeper layers of soil a large amount of plant food and upon their decay leave it in a very available form in the surface layers.

By raising alfalfa the farmer not only is providing an excellent quality as well as a large quantity of forage for his domestic animals, but is at the same time enriching his fields and doing it with a fertilizer which if purchased in the market would cost a great deal of money. Are we still to continue to buy these high priced fertilizers when it may be possible to have this inexpensive way for the trying? Let us stop and think of the possibilities that may lie just within our reach and are ours for the asking, and then determine that we will attempt the growing of alfalfa and if successful we will leave an everlasting monument to ourselves and a bounteous legacy to posterity.

THE INFLUENCE OF CULTURAL METHODS ON TOBACCO.

BY HARRY RICH, GERMANTOWN, OHIO.

[Read at the Farmers' Institute held at Centerville, Montgomery County, February 1 and 2, 1905.]

The object of this paper is to examine and discuss certain practices pursued in the culture of tobacco and point out the results that are obtained under various conditions and methods of growing the crop. The tobacco plant, to a greater extent than most cultivated plants, varies according to the conditions under which it is grown. In a large measure this is so because the plant's most variable organ, the leaf, is the commercial product desired. This tendency to vary in yield and quality according to the soil, climate and treatment can be made use of by the grower to direct the growth of the crop towards certain definite ends which he may desire. For the farmer in his cultural operations regulates rather than animates the active fertility of nature. But in order to regulate nature's forces to start them in the proper direction he must have a correct knowledge of nature's laws; a knowledge that certain results are produced under certain conditions, a knowledge of general principles, to guide him in his various operations, and this knowledge is power.

The tobacco plant may be compared to a complicated and sensitive machine depending largely on its ability to make a perfect growth on four factors, namely, heat, light, food and moisture. If these are furnished in just the right amounts and at the right time there is harmony in its development and the best possible growth may be expected; if some of these factors are deficient or excessive then the perfect growth of the plant is hindered and its ability to make the proper development is impaired. Certain diseases may appear, the crop may fire, the leaf may be too thin or too short and the yield too small. While the grower cannot control the type or variety he produces, this being determined by the seed and climatic conditions, he does determine by the way he grows the crop the grade of the variety and thus his success or failure is largely left in his own hands. He controls the grade, among other practices, according to the fertilizers or manure he uses, the distance at which he plants, his method of cultivating, the manner in which he tops and the degree to which he allows the crop to ripen.

What kind of fertilizers should he use? This is a broad question and some fundamental ideas only can be given. To feed the tobacco, as well as other crops, intelligently, one ought to know the composition of the plant or what kind of food it takes from the soil and the physical and chemical nature of the soil. Local tobaccos contain four per cent. of nitrogen or ammonia, four per cent. of lime, four and three-fourths per cent. of potash and one per cent of phosphates. In other words one thousand pounds of leaf tobacco would take from the soil forty pounds of nitrogen, forty pounds of lime, about 50 pounds of potash and ten pounds of phosphates. It will thus be seen that the crop makes the heaviest demand on potash, then on nitrogen and lime in about equal amounts and only to a small extent on phosphates. It ought to be remembered by every grower that nitrogen or ammonia goes to make the growth, the leafiness, the thinness of the leaf, in a tobacco crop and on a soil which fails to produce these qualities as much as is desired nitrogen can be applied with a benficial result. On the other hand potash and lime go particularly to thicken the leaf and give it quality and where these qualities are desired, potash and lime can be used with profit. Phosphates, however, go to produce seed, which is not desired in tobacco culture and as they are taken from the soil by the crop to the amount of only twenty pounds per acre their application for tobacco is not necessary. They are often applied in large amounts because they are cheaper than nitrogen and potash, but it is a wasteful practice because they cannot take the place of nitrogen or potash in crop production. These facts can be used as follows: A soil, like the uplands, which tends to grow a short, thick heavy leaf and on which the crop grows too slowly and the yield is too small, usually needs more available nitrogen; while a soil, like the bottom lands and black lands, which tends to produce a rapid growth making too large and thin a leaf, can be made to produce a smaller, heavier leaf, by applying potash and lime.

It seems to be proven that as a general rule there is no advantage either in yield or quality in planting the crop in rows more than three feet apart. Seedleaf is excepted, for with it provision must be made to perform the operations of topping and suckering. Therefore the question is, What distance should be given the plants in the row? In deciding this question the yield and quality, the length and thickness of the leaf ought to be taken into consideration. The more plants to the acre the greater the yield within certain limits. For instance, compare a planting made by the planter with four knockers with that of five knockers. The five-knocker planting would give one-fifth more plants to the acre and consequently require extra expense in planting, topping, suckering, harvesting and stripping, for one-fifth more plants per acre would be handled in all these operations. While the five-knocker planting would produce more leaves the larger size of the leaves of the four-knocker planting would result in as large a yield, especially, if the growing season was a dry one. A good rule is to set the plants several inches farther apart than the length of the leaf required by the trade. The buyers now want Zimmer Spanish, for instance, to run mostly to long grades, from fourteen inches to sixteen inches after fermentation. The leaf, however, shrinks several inches in the curing and fermentation and the distance to plant this variety would be from eighteen inches to twenty-two inches. The closer the plants are set in the row the thinner and shorter the leaf and the greater the proportion of fillers and smokers, the farther apart they are set the heavier and longer the leaf and the greater the proportion of thick top leaves.

With local varieties heavy top leaves are more desirable than fillers or sand leaves and a crop too thick is better than a crop too thin in the leaf. For this reason it is better to plant too far apart, rather than too close. The richer the soil, and the less likely it is to suffer from a drought, the closer the planting, for such a soil can naturally support more plants per acre than a light poor one.

With tobacco as with other crops the object in cultivating is to destroy weeds and other foreign growth and to conserve the soil moisture. How many times the crop ought to be worked and in what manner cannot be definitely stated. However, on account of the heavy nature of the soil in this locality, and the limited time that can be devoted in this latitude in the spring of the year to the breaking and plowing of the ground, the soil generally is more or less imperfectly prepared for the reception of the plants. Some of this work of loosening, pulverizing and aerating the soil to promote the production of available food has to be done in the cultivation after the plants are set. For this reason the soil cannot be stirred too often. The more thoroughly the soil has been prepared the less cultivation will the growing crop need. The more often and the later in the season the crop is cultivated the longer is active growth continued and the greater the yield. It does not injure the quality to work the crop until the flower buds on the majority of the plants in the row have appeared. After this stage it does. In the first two cultivations the cultivator should be set to run as deep and as close to the plants as possible, especially if the soil is packed. After the soil has been loosened and well pulverized to conserve the moisture a light stirring of the surface leaving a soil mulch of two or three inches is sufficient. This mulch should be maintained at all times. As the crop approaches maturity keep farther away from the row of plants. A safe rule is to keep at least as far away as the leaves extend out from the row. If the leaves extend out from the stalk six inches keep six inches away, for the roots of the plants extend at least as far out as the leaves, there being a natural balance in which the leaves shade the roots. In laying by the crop the practice of leaving the plants on a rather high wide bed is very good. It brings a greater amount of the most fertile part of the soil in contact with the roots. At this period in its development the plant is most active in gathering nourishment. Protected by the heavy foliage which provides a dense shade the plant sends out numerous delicate feeding roots near the surface of the soil, its most fertile part.

The time and manner in which the crop is topped has a marked influence on the yield and quality. One that is topped early, or budded, produces a dark, heavy coarse leaf and while the yield may be increased it is at the expense of quality. The best time to top is when the bud has shot upward on the majority of the plants in the row, but before the individual flowers in the cluster have opened. Other things being equal the best quality of tobacco is then obtained. Besides this the suckers do not develop as rapidly as when the plants are budded. All the leaves at this period also have been unfolded and for this reason it is not as difficult to judge as to how many leaves can be left and the work can be done with an economy of time. Whether to top low or high and how many leaves to leave on a plant depends on different circumstances. The finer the leaves on the plants the less expense in suckering and stripping, yet by topping to low the yield is often decreased and it is poor policy to throw away half developed leaves which in ripening would increase to a desirable size. Perhaps in no tobacco district of the country do the leaves increase in size and weight as they do in the Miami Valley. In many instances the growth of the plant almost doubles itself. This is due to the rich character of the soil and the barnyard manures used which remain more or less latent until this period in mid-summer when they reach their highest in point of efficiency. The richer the soil the higher the topping because the greater the number of leaves that can be developed. The next consideration is the vigor and thriftiness of each plant. The more healthy and stocky the plant the higher the topping. In the expansion of the leaf after topping much depends on the amount of moisture available. The greater the amount of moisture the greater the number of leaves that can be developed.

The time of harvesting is very important. At the time the plant sends forth the bloom all leaf growth has apparently ceased. Its energies are turned to the production of seed. This is prevented by topping, and topping causes the plant to send out suckers from the axil of the leaves. If the leaves are to increase in size and weight these suckers must be plucked off, for they do as much harm if left on as if the plant had been left to go to seed.

The plant continues to accumulate material which necessarily remains in the leaf. The leaf consequently expands and thickens. This continues as a rule for twenty-one days in this climate, the leaf becoming of a darker green color, more gummy and oily. Soon the period of decline sets in. The leaf becomes brittle and begins to turn yellow, giving it a mottled appearance. These are signs that the plant is ripe and the grower harvests before the leaf deteriorates. Tobacco harvested green not only weighs less, but is also poorer in quality than that harvested when ripe. Much of the tobacco raised in the Miami Valley is harvested too green, partly because of danger of frost, partly because of the demand for dark colored tobacco.

THE SILO.

BY W. W. HYSLOP, R. R. NO. 2, SPRINGFIELD, OHIO.

[Read at the Farmers' Institute held at Donnelsville, Clark County, January 30 and 31, 1905.]

I want to occupy as little time as shall be practicable and leave most of the time for a long discussion on this subject. Why are there not more silos in Ohio? There is only one answer to this question and that is: The farmers in Ohio do not know the value of a silo.

It is a known fact that forty per cent. of the value of our corn crop is in the stalk, and when we know that why do we throw it away? By means of the silo we can feed our cattle as cheaply in the month of January as we can pasture them in the month of June. Ten years' experience has proven to me that that is a fact. In the use of the silo we do not destroy the value of the blade, we do not destroy the value of the husk, neither do we destroy the value of the ear in the least, but we do preserve forty per cent. or two-fifths of the value of our corn crop that is in the stalk and make as good feed of it as we can possibly make of any other part of the corn.

We have found no better feed for stock sheep; we have found no better food for brood mares and colts, than good silage. This last may be a surprising statement, but upon my own farm I can show you brood mares in fine condition and colts in a good, thriving condition that have not had anything to eat all winter but silage and clover hay or cut fodder.

The point I wish to make is the great necessity of all farmers producing their salable products as cheaply as possible. When we learn to produce four-cent pork with fifty-cent corn we can make profit on hogs; when we learn to produce four-cent beef with fifty-cent corn we can make a profit on cattle. The same rule holds good in producing milk. It was my great pleasure to hear Mr. John D. Nichols, president of the Ohio Dairy Association, at the State Farmers' Institute at Columbus, about three weeks ago, and that is the point he emphasized most.

Now as to the question of building silos, I will say, farmers, build a silo by all means, and if you want to be economical about it, build it yourself. When I say this, I mean, build it as you would a wagon shed. When we want to build a wagon shed we do not send to Michigan or Nebraska and have some one frame it and ship to us and then hire a carpenter to put it up. Instead, we order the material as near at home as we can, get some help and put it up ourselves. Do the same way with a silo.

For a silo twelve feet in diameter and twenty-four feet high it takes about ninety staves of 2x6 stuff, dressed on both sides, twenty-four feet in each stave. Ninety staves make two thousand one hundred and sixty feet which, at twenty-two dollars per thousand (the price in Springfield) makes a total of forty-seven dollars and fifty-two cents for the lumber. For hoops or bands we use one-half inch cable wire; the heavy cable telephone companies use to anchor large posts with. The cost of this is two cents a foot and it takes about forty feet to reach around at twelve-foot silo, making eighty cents for each wire. Then we have twenty cents for two eye-balls, twenty-four cents for two clamps and six cents for two washers, making a total cost for each band complete of one dollar and thirty cents. For a twenty-four-foot silo nine bands are sufficient to hold it. This makes the total cost for all material above the foundation about fifty-nine dollars and twenty-five cents, which is about one-half the price of a factory built silo. You certainly can buy as good lumber and hardware as a Michigan or Nebraska man can.

I only speak of that part of the silo above the foundation because the foundation does not cost any more for one silo than for another. Some build their foundations of stone and some of cement. Both are good and the cost about the same. I would not recommend the building of a cement silo at all because the interest on the extra cost of a cement silo over one of wood will buy the wood material for a new silo every twelve years, using the old hardware each time.

THE FARM TEAM.

BY P. P. MECHLING, GLENFORD, OHIO.

[Read at the Farmers' Institute held at Brownsville, Licking County, February 1 and 2, 1905.]

In this paper I will give briefly my experiences with the farm team and some conclusions I have drawn from them. I do not class myself with the breeders and yet nearly all the horses I have on my farm are of my own raising; I buy a few colts and some older horses, not so much for profit as for my own use, which comes first in my estimation, profit being of secondary consideration. After the busy season is over my teams get fat enough to please the horse buyer and I then sell the surplus stock. No doubt I could get higher prices by feeding extra, but, taking into consideration the use of money and the cost of feed, I sell without expense.

I find that I can "even up" a team better in size and color by buying than by breeding. I have tried three or four times for a matched team using the same sire and dam; the result being a larger and a smaller horse, or a horse and a filly, the only thing that matched was the color. In one attempt I had neither size, sex nor color alike. We have types of draft horses now that breed to a more uniform size than those we had twenty or more years ago.

It is almost useless to give the proper size for a team, for location has much to do with the question, also the fancy of men. Some men find it difficult to estimate the weight of a horse. I had a colt that weighed eleven hundred and eighty pounds at eighteen months and a neighbor guessed the weight to be nine hundred pounds. Were I to keep one team only I would not want them to weigh over thirteen hundred pounds each nor to be higher than sixteen hands. I would have them rather blocky, the Normandy type suits me very well, although I should like a little more stylish ways about them. If I could get them with about one-quarter trotting blood I would prefer it. It gives them style and endurance. The size mentioned fills more places than any other one size. Such a team is heavy enough for all farm work, will do ordinary plowing, and in ordinary roads will pull two tons. That is heavy enough for our common wagons and the horses make a very good surrey team and are not bad in a buggy, single or double.

For usefulness it is necessary that the team should be properly broken. My time to break colts is in the winter before they are three years old; I then have them pretty well broken and their shoulders in good condition for spring work. Some people work colts at three years old. I have worked a few of that age, but they are not matured for the work and if they should be harder to break they are too young for the amount of work they should do to quiet them without hurting them. Now a word of advice as to the breaking. If your colt is used to the stall and has been haltered you are that much ahead; if not, get him in the stable as soon as possible. If you have other colts, even if not of the same age, take them with him, he will be more quiet. Try to halter him; if you cannotdo it throw a rope over his neck and fasten it so it will not draw tight enough to choke him; have the rope long enough so that you will not need to get very close to him; now pull on the rope just enough to let him know that he is fast, slack it and then pull again, and so on; pretty soon you can get a halter on him. A rope halter with a long rope is the best one to use. As soon as you can get to him, caress him and he will soon find that you do not want to hurt him. Pull him toward you a little and if he makes a step caress him for it again, then get on the other side and pull in the same way. Do not forget to keep on good terms with him. He will soon walk after you, but if he stops and you cannot get him to step forward, give him a pull to one side or the other and he will soon lead all right. It should not be over half an hour before you can lead him all right, out of the stable as well as in, but do not forget that you are handling a colt. After he is trained in this way he will not pull much when hitched to the manger. Give him several such trainings a day if you have the time. You can put on a bridle now, so that he will get accustomed to the bit; this should be done a day or two before you wish to work him; let him stand in the stable or loose for a time with the bridle and then you can put the harness on him and let him walk around with it on. Before you take him out of the stable, rein him up, but not tight. In this way he will get used to the bit without making his mouth sore. To get the bit in his mouth (which a colt hardly ever likes) catch your bridle at the top with your right hand and lay the bit on the left. Then bring your left hand up under his chin and catch your finger in the opposite side of his mouth inside of his gums and press; he will soon drop his jaw and you can put in the bit. This is a good way for some old horses and is very likely to break them of being hard to bridle. This may not all go as smoothly as it sounds, but if the master shows as much sense as the colt success will follow.

You are now ready to hitch him up. If you have a good, quiet horse to hitch him with put the lines on them and the neckyoke and drive them together for a while, starting and stopping often; speak to him often, he will soon learn to stop when the other horse does. When there is snow on the ground the sled does very well to hitch to, or anything that runs pretty easily; a log or a harrow is a poor thing to hitch to. Drive the horses to your rig and send the broken one over the tongue, slip the neckyoke ring over the tongue, then the traces of the old horse, next hook up the trace on the outside of the colt, then the inside trace. You are ready to go now. If you have someone with steady nerves to help you all right, if not you would better do this work yourself; at any rate do not make a frolic and call in your neighbors. If your colt stops and does not want to go on, drive your broken horse so it will push the colt to one side and the tongue rubbing against him will start him again. Should he want to go too fast, drive your broken horse a little faster, this will make things even again. Start and stop often and do not forget to go to his head and pat him and talk to him; it will make him forget his new surroundings. If the old horse feels a little unnerved, give him credit for good behavior. Give the colt all the privileges you can and feel safe in doing so. In an hour or two you will know him pretty well, but remember that all colts are not alike, so you cannot treat them all alike. I have had no bad colt to break yet, but some require more attention than others. The more regularly you work them the sooner they are broken, but you must not overdo it.

We will take it for granted that the old horse is a good puller—what every teamster prides himself upon having. By loading so that the colt can pull its share pretty easily and gradually increasing the load you will not have much trouble about getting it to pull, but do not get it spoiled or it may never get over it. After it knows how to pull, a good heavy load will make it all the more true. Let us call this colt number one. Now, when you get number two broken you will have a young team that you can be proud of and when you want to sell them you will have no trouble to dispose of them at a good price. You will have two chances, one from the horse buyer and one from your neighbor who will know if you have a well-broken team and will be, as a rule, a better buyer than the horse buyer, especially for your horses.

Do not be too fussy and pity your colts too much. After they are seasoned to work and you can have them feeling all right (not too fleshy, especially in summer, so they can endure the heat all right), and if they have good full shoulders for the collar to rest against, you can work them right along. Do not keep them unnerved all the time; an hour of excitement will do them more harm than a whole day of steady work. If you want to favor your team, the morning and immediately after dinner are the proper times to do so. If they are pretty free in the morning, hold them back a little, until they sweat some, which a horse in good condition will do. This is a good time to clean the collar and the shoulders, by taking your hand to clean off the collar and rubbing the shoulders dry. This is the best preventive for sore shoulders and you know that "an ounce of prevention is worth a pound of cure." I hardly ever wash the shoulders unless the horse has been running idle for a few days and the weather very warm and then only occasional evenings. Then I put some salt in the water.

Ask no more of your team than you know it can do and then see that it does that. Be kind, but firm; a horse soon knows when he can have his own way. Teach them to stop on the word as well as to start on it. It is the more important of the two and may save you a broken rig, or a more serious accident. They should know how to back as well as to go forward. Another thing a team should learn is to hold back. In harvest time we use no brake on the wagons and after making the horses hold a load or two they discover that they can hold it.

Drive with taut lines and have them properly adjusted. If your horses work up even you should have your inside lines even and from eight to ten inches longer than the outside ones; If one horse travels faster than the other, have the line from the slower horse shorter; if one horse works closer to the tongue than the other, put a strap with a ring at one end to draw the line through on the trace of the other horse; this will overcome that difficulty and will make your wagon or machine gear all right.

The harness does not need to be expensive, the important part is to have it fit all right. The bridle should be loose enough to allow the bit to drop away from the lips, yet not too loose. The collar should be smooth with a good sized bulge so the trace will clear the shoulder, not too short or it will make sore necks and not too long or it will cause bruised shoulders. It should fit pretty close to the neck especially at the top. To fit a new collar, put it, or its front side, in water, warm water is the best, and then put it on, fit on the hames and draw them up tight, and leave it on until it is dry; by drawing the hames tight you will never be troubled by their coming off when the horse is backing or holding back. Have the back band long enough so as not to pull the collar back too far on the neck. The lines and bits should be good and safe, for a good deal depends upon them.

I feed corn, hay (one-half each of clover and timothy), and some bran. I am now feeding shredded fodder. I raise no oats and do not feed any. After the spring work is over I turn out my teams at night and on idle days, but have them come to the stable once a day for a feed, not that they need it so much, but it keeps them more solid and they like to come to the stable. I can call any horse to the stable, so I have no use for a dog. I should prefer corn and oats for feed, but have had no bad results as yet from the feed I am using and no use for medicine, drugs or stock food.

I have my teams watered when they come from work and when they go out; when they are turned out in the field they have the opportunity to drink when they want it. Some people claim that they should not be watered after feeding; my horses drink oftener after feeding than before. I try to keep salt in the corner of the trough all the time and this, perhaps, makes them want to drink more.

In conclusion let me urge you to be a friend to your horse and he will be a friend to you.

CATTLE.

BY DR. H. M. BROWN, HILLSBORO, OHIO.

[Read at the Farmers' Institute held at Lynchburg, Highland County, January 25 and 26, 1905.]

Your committee was extremely liberal in assigning to me a subject so large and so comprehensive in its scope as to abundantly satisfy the most grasping. It is well known to many of you that I am no dairyman, and it will not be expected of me to present any claim of ability to discuss milk cattle. Nor can it be expected that, in a few minutes, I will be able to set before you, in good order, all the comparative merits or demerits of any one breed of beef cattle. I have, therefore, decided to try to make an abbreviated report on beef cattle in general, hoping to start some thoughts that will interest all and prove of material benefit to many. With no prejudice against, nor avowed preference for any one breed, but only to plead for better selection, better breeding and better care of the cattle bred, in order that the business may be made profitable and a pleasure rather than a losing and discouraging game at which many play for a short time, only to give it up in despair, wholly convinced that it is not worth the trouble and expense to the producer.

If you would be happy and prosperous, if you wish to improve your soil, if you care to pay off the mortgages, and if you want your boys to stay at home and become interested with you, discard all poor live stock, the sooner the better, and raise the right kind and keep it right, no matter what the expense of making the change may be and you may, with proper care and painstaking, step out of a life of drudgery and doubt into one of pleasure and profit that will be a revelation to you and yours, never dreamed of in your philosophy. If you were loaning money, would you not stop to think as to whether or not the man to whom you loaned had the material in him to make his business successful and pay you back? If you contemplated an investment of money in stocks and bonds, would you not consider it good business to inquire if the investment in which you were placing your money was of a character that would insure the payments of dividends on your investment, and at the same time keep your capital stock intact and always worth the face of it in the open markets? Assuredly you would do so and you would exercise extraordinary care to make it certain before taking the step, and so also in all your business transactions, except, perhaps, that of selecting the sires for your live stock, which, to you as farmers are your stocks and bonds. The amount of dividends you are to receive depends largely or wholly, we are justified in saying, upon the selection of animals to the seed of which you expect to feed your hard-earned grain and forage. These represent the sum total, in many instances, of the farmers' revenues and it is of vast importance to him and his family, that he secures the highest value obtainable for the product, and it is equally necessary that he finds that market at home on his own land so that the soil will maintain its fertility and original value by reason of the manurial residue of farm products consumed on the farm.

We would all resent the suggestion if any one should advise us to put money in gold bricks or to place faith in the bunco man, yet how much more profitable is it to try to make beef out of corn and roughage, when fed to a scrub steer, or good pork when fed to a scrawny vermin-infested pig, or mutton when fed to a weak, cat-hammed and ill-bred lamb!

As between ordinary cattle and prime cattle, only a few weeks ago in this period of great market depression, at Chicago, there was a difference of four dollars per hundred weight in the open market. Think of it! A poorly bred animal weighing one thousand pounds was worth, on that market, on that day, and also on many other days, forty dollars less than a well-bred and well-fed one of the same weight. A car load of sixteen good ones would bring six hundred and forty dollars more than a car load of bad ones of exactly the same weight, no doubt costing as much or more to the farmer to produce.

Is that object lesson, which is not at all an uncommon one, not enough to cause the most of us to turn over a new leaf and begin with a clean, new sheet, with a fixed resolution to do better work in the future?

No matter how depressed the market is, or how hard the times, a really prime animal will always sell at a living price, whereas the times must be very flush indeed and the supply greatly inadequate to make a badly bred animal bring anything like full cost of rearing. It is one of the inexplicable mysteries of the age, that a farmer will be content with indifferent live stock, when example after example, before his very eyes, shows him that good stuff sells high and bad stuff sells low. If farm animals will not pay cost of producing and a profit besides the business is going backward and the farmer is the loser. Where good farm animals are bred and fed extensively in communities of considerable size it will be seen now and always that those communities as a whole, and their citizens as individuals, are prosperous and happy, responsible and well to do, with good, well-preserved farms, money to buy anything in reason and to travel, take a holiday or what not, with no creeping fear of the future, for they have demonstrated to a certainty the reliability and profitableness of their business and have no misgivings regarding the final outcome, which I assure you is not universally the case where scrub stock is the rule.

Interest is everywhere reviving and it will only require reciprocal encouragement among us, each cheering the other on his way, to create such a spirit of enthusiasm as will revolutionize the live stock industry of this county, and before long have buyers from far and near wending their several ways hither as the Mecca to which they would come, with confidence that the best can be purchased here. The business will moreover be so remunerative that we will be amazed at the change wrought both as to profits and delight in the work as compared to the old way.

When it comes to choosing the breed of beef cattle, we all have our preference based upon the greater merit as we each individually see it, but it is not for me to say which breed you should have. There are three leading beef breeds, viz.: the Shorthorns, the Hereford and the Aberdeen-Angus. They are all excellent cattle and capable of making great profit for the producer if properly handled. None of them will be profitable if not handled and fed with skill, but the difference between them and scrub cattle is that they will pay for much care and bountiful feeding, and the scrub will not, which, to my mind, is the very essential difference. Either of the three breeds, according to the fancy of the breeder, will do, but the individuality must be good and the breeding must be right, for pure breed, without individual excellence, is only one-half a recommendation and often greatly misleading.

Now, what is meant by right breeding? I find that there is a great deal of confusion among would-be purchasers as to what constitutes good breeding. To many there is a vague, occult meaning conveyed by the term that is not susceptible of easy comprehension, but in fact it is very simple. If the individual himself or herself is good it is well so far, but if you find that the sire and grandsire, and the dam and the granddam and so on farther back in the pedigree were not particularly good, but merely cattle, with nothing in particular to recommend them, then it is good judgment to hesitate to install such an animal in the herd, for the progeny may revert to the ancestral lack of excellence and the mistake of making a non-dividend paying investment will have been made.

On the other hand, if the indivdual is not so prominently excellent as one would like, should he be backed by a long ancestral line of good ones on both sides for many generations, notwithstanding the animal in question is a little lacking in good points, one will likely get good results by placing such an individual in the herd. That, in a nutshell, is the significance of so-called good breeding.

To be a successful student of pedigree gives to a breeder the ascendancy over others who are not so informed when it comes to intelligently mating his herds and flocks. When buying the future head of the herd, if the best of individuality, together with the best of pedigree on the sire's side and also on the dam's for at least five generations back, can be obtained, then the ideal selection has been reached. It has been in the past, and will ever in the future be a habit of some in the breeding fraternity, to run to fashion in selecting breeding animals, regardless of the excellence or lack of excellence in the indivdual, requiring only that the animal belong to some fashionable family or tribe, and it has done more and will continue to do more to bring into discredit the different breeds than any other one thing.

Having selected the foundation of a herd, the obligations of the purchaser do not cease. He must properly care for his purchase or disappointment will surely result. There is not a feeder within the sound of my voice who will not acknowledge that he takes pleasure in feeding plentifully to cattle. To see them eat with satisfaction a bountiful ration and lie down contented and comfortable, is one of the pleasures of the care of live stock, but if the ration must be doled out in only living quantities, and hardly that, just enough to separate the poor brute from starvation and death until spring brings grass, so that the cost may be held within the limits of the price we are to get in the fall for a poorly bred, poorly fed and poorly fleshed animal, where is our profit and where is our pleasure? If, however, we can hit upon the kind of animal that will pay us back good value and good profit on a rich supply of feed given in liberal quantities from the day the animal is born until the day he is taken to the shambles, will we not feel that we have experienced a most grateful surcease from worry and concern regarding our charges, and that our work has suddenly opened up new interests and new pleasures and that it is good to be a farmer and a business man who can stand among his fellow-citizens and feel that his work is accomplishing results which entitle him to a positon in the great social world second to none, and far more dignified and respected than many. "Whatsoever ye sow that shall ye also reap," is nowhere more true as when applied to the breeding and reproduction of live stock. An ideal conceived in the mind, and intelligently striven for, of form, style, constitution and type, when realized by proper mating, is one of the most gratifying of achievements and more profitable than any other branch of agricultural pursuits. Be it cattle, sheep, hogs or other live stock, the results are the same and the profit will inevitably follow, no fear of that, if the owner has the courage to go to the expense of first breeding right, and then feeding right.

The difference between a good beef animal and a bad one is that the good one, by a long line of good ancestry, has inherited the propensity to make beef out of feed that sells high, and the bad one has likewise inherited a propensity which is the reverse of the above. When the corn and other feed go to loin and rib of a steer and settle down into meat it will sell high, for the butcher knows that his patrons will pay handsomely for such cuts, but when the same feeds go to brisket, hip-bone, tallow and paunch the butcher knows that he will be obliged to throw away half that animal, and the other half, or at least two-thirds of the remaining half, must be sold as chuck, rump and soup-bones. How can you expect him to pay you the cost of production, for such an animal has been as expensive to raise as the good one. In the selection of a bull or cow for breeding purposes, remember it is beef you are striving to produce and the kind that is good to eat, the best that can be grown. So, then, discard wide and prominent hip-bones that sell for soup making at a very low price. Do not breed long and redundant briskets hanging to the knees, for you would not eat that yourself. If you were a dealer in meats would you feel like buying a great weight of live brisket only to throw away when the animal comes to the block? Avoid heavy bone, for the butcher can only sell that to the phosphate manufacturers at much below cost to him. It is in horses you want heavy bone. Horses need them so as to be strong to draw heavy loads. And hogs may need bone to hold their weight when fed to a high degree, but cattle need only light bones for locomotive purposes. They cannot be used when they come to the block, the ultimate end of all meat-producing kine. I have heard men say, in selecting a young bull, that they preferred a certain one because he was heavier in the bone. That would be all right in the old days when steers were kept until four or five years old and fed to great weight, but that day has passed, never again to return, and well may it be, for ot the present time when feed is so high in price, I cannot see how cattle can be fed with much profit after full growth has been attained, when the feeder must depend upon the gain in flesh alone without the element of natural growth to help along in the sum total of meat-production.

Cattle, to be profitable, must be fattened while still actively growing or profit may not be expected. I have said that in the breeding of good beef cattle a heavy paunch is objectionable with the full realization that many good cattlemen rely upon that very thing as a good indication in a steer intended for the feed lot. You have heard many feeders say, "Give me a good heavy feed basket on the inside of a steer and I will be able to put much weight on that steer in a short time," which fact is all right for the feeder, but bad for the butcher and the latter has long since ceased to pay full price for such cattle, well knowing the great amount of drift that will take place when killed. So you must fight shy of the large belly if you wish to sell at the top of the market and get the best value for the feed you have given to your cattle. There are other just as important indications of good feeding qualities in beef cattle besides the heavy paunch, which latter has been much overrated by the average feeder of the past. The points are, some of them, short, broad head, broad mouth with heavy jaw, wide open nostrils and prominent, clear eyes, good coat of healthy hair (the latter the most essential, probably, of all), well sprung rib with deep, thick chest, denoting good constitution, and, for a first-class seller, the loin must be broad and level, for it is from the loin that the highest priced cuts are taken. Above all other considerations see that the legs are short and well set apart, giving the animal plenty of foundation upon which to build a carcass of first-class beef.

It is obvious to all that horns are intolerable in the modern beef steer. A horned steer is nervous with fear that one of his fellows may give him a dig in the flank at any time and he fails to feed tranquilly and contentedly, which are important essentials to rapid gain in the feed lot. The dealers will not buy horned cattle at all if they can fill their orders with hornless ones, and the man who has a nice even bunch of fat, hornless young cattle can outsell his neighbor, who has horned ones, anywhere from fifteen to fifty cents per hundred pounds. Horned cattle ship badly, the drift is greater and the meat is likely to be bruised and blood-shot, especially if strange bunches are shipped and penned together. The exporter will hardly look at a horned steer if he can find hornless ones, even though the trouble to do so is great.

Quality, or character, is something inherent in the best of cattle, and might be designated as refinement or finish, compactness and style that gives an animal an appearance which is the reverse of common. That goes a long way toward selling an animal to good advantage, and the breeder who is sufficiently versed in the proper requirements of beef cattle to recognize it at a glance, is more fortunate than his less experienced co-laborer, who has not acquired such nicety of distinction. But with perseverance all this comes to the earnest student of live stock selection.

How shall the ordinary farmer make money out of well bred beef cattle? I can tell you how many farmers throughout the west and central states are getting rich and it is as follows:

First. They buy a good, pure bred bull of the breed most fancied. They have him low down, deep, broad and fine in the bone, straight, level back with well sprung rib, straight top and underlines, with no tendency to develop low-priced growth anywhere. They breed him to the best of native cows that can be obtained. They never let the calves get thin, but feed them from weaning time to butchers' block all they will clean up with keen relish, of everything that can be produced or raised on the farm, corn, ground and whole, clover hay, corn stover, bran and green grass, always maintaining a balanced ration and never minding the expense. They sell these at from fourteen to twenty months old in the best markets, never having let them lose their baby fat or a pound of weight for want of good, rich feed. Thus the feeders get the combined benefits of natural growth and artificial forcing, yielding a two-fold profit with scarcely a cent's expense for so-called maintenance ration. Such cattle are the baby beeves of modern renown and are worth in Chicago, at the time of this writing, six dollars and fifty cents per hundred, and just before the holidays eight dollars was the price. What a contrast between the business of selling calves, only a little past one year old, at from sixty to eighty dollars each, as compared to the old way of keeping steers winter after winter and finally selling to feeders for thirty to forty dollars, at the age of three. My motto, in theory, has been for years, "good breeding, good feeding and early selling," for making profit on live stock, and as fast as it has been possible the theory has been put into practice with never a regret for the change.

RAISING LAMBS.

BY J. T. DRAKE, WEST MANSFIELD, OHIO.

[Read at the Farmers' Institute held at West Mansfield, Logan County, January 20 and 21, 1905.]

It has been said that all great men had good mothers. It can be said with almost equal certainty that all good lambs have good mothers; whenever you see a good lamb you almost invariably find it following a good mother. In order to have good mothers you must have good blood, good feed, shelter and water. It is just as reasonable to expect the cashier of your bank to honor your check when you have not a dollar on deposit and no means of placing any there as to expect a ewe to produce two good lambs, she being poor in the fall, with no shelter all winter but the windward side of the fence, fed on corn stalks and with no water except as she melted snow to get it.

We have a small farm of eighty acres and, after keeping horses enough to do our work and driving, cows enough for milk and butter for the family, hogs enough for our meat and a few to sell, six or seven dozen chickens, there is not a great deal left. That little we devote to sheep. We keep from thirty-five to fifty grade Shropshire breeding ewes. In the last six years, or since we had a good place to keep them, we have raised and marketed annually, on an average, 140 per cent. as many lambs as we had ewes.

We usually arrange to have our lambs put in an appearance about the first of March. The ewes must be in good condition. I would rather they were fat, for I do not think a ewe can be too fat if the flesh has been put on accompanied with daily exercise. The good shepherd should provide good, warm quarters for his sheep so he can save young lambs when the mercury is below zero.

When we are expecting lambs we have our sheep barn divided into five different apartments. I have always, at this season of the year, felt the need of small pens for my ewes and lambs so that I could give them personal attention, so, as necessity is the mother of invention, I devised a plan which I will now explain to you. Three years ago this coming spring I made fourteen doors two and one-half feet high and five feet long. I then went to the hardware store and purchased three and one-half dozen hooks such as you buy to put on the inside of a barn door. I then stapled a hook at the top and another at the bottom of the door, so that they would come near enough the ends to reach staples driven in the siding of the barn. I began at the corner of the barn and measured each way five feet and drove in my staples at the top and at the bottom and hooked on my doors. I then fastened the doors together in the same manner. This made pen No. 1. I fastened one door of pen No. 2 to the barn five feet from pen No. 1, and the other door of pen No. 2 to pen No. 1. In this way I made the seven pens all in a row and could place a sheep in any one of them without molesting the other sheep. As fast as my ewes become mothers I place them in these small pens so I can give them personal attention until their lambs are known to be all right and doing well. They are then taken out and placed in an apartment for ewes and lambs. The question may arise in your minds how I get a large Shropshire ewe in a small pen. I simply open the pen; then I go to her, take her lamb or lambs in my hands, hold them about as high as she carries her head (which is pretty high when I have her lambs), I walk backward to the pen, place her lambs inside, step back, she goes in, I close the door and all is well.

When the oldest of my lambs are two weeks old I place in the center of the barn what we call a creep, a place where the lambs can get and the ewes cannot. In this creep I place a trough with some corn meal in it. You who have never tried it will be surprised at how young an age lambs will eat grain. They will eat shelled corn by the time they are one month old.

I give my ewes about all the grain they will eat during March and April. The first of May, I begin to decrease the grain, lessening the quantity gradually until about the middle of the month. I then turn them on good grass and, oh, how the lambs do grow!

OUR DOMESTIC SHEEP.

BY NIHLE E. MILLS, COOLVILLE, OHIO.

[Read at the Farmers' Institute held at Coolville, Athens County, February 6 and 7, 1905.]

Our domestic sheep is supposed to have originated from a species of wild sheep, specimens of which were found in Asia, southern Europe and Africa. As we read of keepers of sheep in almost the beginning of history, we presume that they were the first animals domesticated, and through the vicissitudes of time we find them following civilization until today they are to be found in nearly all parts of the civilized world, changing their form, size and fleece to suit the climate or to please the fancy of their owners. I mention this last because no domestic animal is so easily or quickly moulded to suit our fancy. All families of coarse wools, with which we are familiar, originated in Great

Britain and all fine wools in Spain. Sheep are divided, as to wool, in three classes; short wools, middle wools and long wools.

The short wools include Merinos, Cheviots and Dorsets. Middle wools include Southdowns, Shropshires, Oxfords and Hampshire Downs. The Southdown is the oldest of this class and all the other Downs are supposed to be indebted to it for many of their excellent qualities. The long wools include Cotswolds, Leicesters and Lincolns. The origin of the Spanish Merino is unknown, but it has been known as a distinct breed for two thousand years. Two importations of importance of Spanish Merinos were made to the United States in 1802 and 1809. From these two importations has arisen the American Merino with its various families. All families of delaines and blacktop are descendants of the American Merino and were developed by a demand for smooth sheep, bearing a delaine staple of wool, a wool that has always sold at a premium over other fine wools. The French Merino or Rambouillet originated from an importation into France of four hundred sheep selected from the finest flocks of Spain in 1786. The importation was made by the government, and the sheep were kept on the royal farm at Rambouillet from whence they take their name. There have been some French Merinos in the United States for fifty years, but more interest has been taken in their importation and breeding in recent years and their numbers are increasing.

As to the care and management of sheep, it is not a laborious task, but one requiring carefulness and watchfulness. I shall tell as briefly as I can, in part, of how I care for mine, although in telling it I feel that I cannot say much that will be of value, for after all there is so much more in doing than in knowing how to do. I shall begin with the fall of the year. I believe it pays to begin feeding in the fall before the sheep begin to fall away, as a sheep in good condition then is half wintered. The time I begin to feed is governed entirely by circumstances, the pasture, condition of the sheep, weather, etc. This fall part of the sheep received no attention until the snow came in December, while my ewes which were on poorer pasture began to receive a ration of grain in November.

In the fall I shelter my sheep from the first cold rains and that is the only time in the year that I bother much about sheltering them. After they have been driven in a few times they will look out for themselves, as where there is no other stock in the way the door is never shut. In winter I feed hay twice a day and usually grain once a day. To my flock of sixty ewes, I give less than two gallons of grain a day, about one-third oats and two-thirds shelled corn; in quite severe weather I give about the two gallons, and in milder weather less, and make the ration stronger of oats. They receive all the good hay, clover and timothy mixed that they will eat clean and are now in excellent condition. My young sheep receive rather more grain as they need some on which to grow. As the lambing season approaches I shall add bran to their ration and probably increase the ration and divide it into two feeds, morning and evening.

I have had experience with lambs dropped from February to May, and have found the latter part of March and fore part of April best suited to me. I can get a better growth on the earlier lamb, but the cost of feeding the mother enough to nourish the lamb until grass comes is too much. I prefer the times I mentioned for several reasons; first, the lambs when they are young do not require so much milk and the ewes being on dry feed do not give so much, but as grass comes they gradually increase in flow which meets the demands of the youngster. Then the lamb is just right to begin eating for himself when the grass begins to grow; but the chief reason with me is that the ewes are close at home at that time and I can see them often. If the lambs are dropped when it is cold enough to chill them I take them to the fire only as the last resort as it makes them so tender. My way is to heat some old woolen garment heavy enough to hold warmth and wrap it around the youngster, then just hold him a moment until the heat begins to penetrate his body, then he will go to sleep and probably sleep a couple of hours and wake up warm and dry ready to take care of himself, if he has a good mother. In my barn I have a feed alley forty feet long with sheep apartments on each side; I have lamb creeps so that after the feeding is over I can open these creeps and let the lambs congregate in there for a frolic. I place bran in low troughs and they soon learn to eat; and when they are older add oats and a small quantity of corn. There is a small rack in which I put some clover hay for them to pick at. I put the sheep on grass as gradually as I can, giving them some grain and what hay they will eat and let them run on the pastures near the barn until the grass farther from home gets a start.

The sheep which can come to the sheds find prepared there salt with about a tablespoon of turpentine mixed with each quart of it. I believe it would pay to provide this in covered boxes in the pasture field, for the smell of turpentine will keep the "gad-fly" away, besides turpentine is good for the general health of the sheep.

It is imperative that we always provide plenty of good water for them as they will drink a quantity if it be good, but starve before they will drink poor water. A sheep confined on dry feed drinks about one gallon of water in a day. I cut some ragweeds almost every fall to haul out and spread on the snow, for they seem to relish them very much and then it saves hay also. I like to feed fodder outdoors and let them eat what they want and have cattle to clean up what is left.

I have had little experience with parasitic diseases, but enough to show me that I ought to be using some preventive as it is claimed that nearly all the old sheep have more or less stomach trouble. It is recommended that we give them treatment before turning out to pasture in the spring and during summer mix worm powders with the salt. For stomach worm treatments in common use are gasoline and milk and a patent medicine called "toxaline," but a home remedy easily given, is to place alternately turpentine and salt and ashes and salt where they can readily help themselves. The best preventive is to pasture the lambs the first summer on fields that have recently been plowed and reseeded.

I had an experience this winter which was new to me. The early part of December I turned a bunch of lambs in the field where my sheep barn stands. In a few days I had over a dozen sick lambs and some of them died in a short time. I was very much puzzled over the matter until I made an examination and found their stomachs full of pawpaw seeds; some of them contained a full pint. There was a small patch near the barn that we had reserved and sheep had been in that field ever since I can remember, but I never knew of their eating pawpaws before.

In closing, if I were to give any advice it would be keep some sheep, they will pay you, but do not keep more than you can keep well.

PREPARING HOGS FOR MARKET AND SANITARY CONDITIONS.

BY D. GUIN COYNER, GREENFIELD, OHIO.

[Read at the Farmers' Institute held at South Salem, Ross County, December 19 and 20, 1904.]

The subject before us today relates to the hog and his existence. There are three things to be considered in the hog business: the hog, the corncrib and the market. And we virtually live in the corncrib, or, in other words, the corn garden of the world. When we undertake any business enterprise, the first question that we ask is, will it pay? Let us examine for a moment. Does it pay to prepare hogs for market? I quote you from what is considered the most reliable authority in the world, *The Cincinnati Price Current*, "The average price for corn for the last thirty years at Chicago has been forty-four cents per bushel. The average price for hogs per hundred in the same period at the same place has been five dollars and sixty-three cents per hundred." On the basis of ten pounds of pork for a bushel of corn, you have a margin of twelve cents a bushel for feeding your hogs the corn instead of selling it in your market, which means that a man may have hog cholera to sweep out his entire herd once every five years and still, at the same time, get the market price for his corn and improve his land. The assertion that I make in reference to the margin of twelve cents per bushel, as the authority quoted gives the price current, may seem large, but I will give you what Uncle Sam says, in the Year Book of the Department of Agriculture of 1902, which authority no one will question. The average price in the United States in ten years from 1893 to 1902 for corn has been thirty-five and one-tenth cents per bushel, on December first. Quoting the same authority, the average price of hogs on the same date for ten years has been four dollars and forty cents per hundred. This shows a margin of nine cents a bushel in favor of feeding the corn in December instead of selling it. I have been asked the question how I can buy corn and buy hogs and make any money out of the proposition. The secret of the whole thing is, that the parties from whom I buy my hogs do not get the market price for their corn when they sell their hogs and I get the full market price for the corn they feed. For example, last fall at the first of October a hog that weighed one hundred pounds was worth five dollars and seventy-five cents; if the party fed to the first of December and put on sixty pounds and sold the hog at four cents per pound, it would bring him in six dollars and forty cents. The feeder in that case would get sixty-five cents for the sixty pounds improvement, which would take six bushels of corn and would only leave him ten and one-half cents per bushel for his corn. The question being settled as our old friend David Crockett used to say: "Be sure you are right and then go ahead."

In feeding hogs we have stated that there are three conditions—the hog, the corncrib and the market. To make the business successful, the hog must be healthy, of course, the corn crop good and the market likewise. Any one of these three conditions lacking, will, in slang phrase, take a man's nerve. You can buy a corn crib, but you cannot buy a hog market and if the hogs get sick, it is all off. The condition of sick hogs and a bad hog market will do for a man's money what the Irishman told the priest about his friends when he came to see him on his dying bed. The priest asked him where he was going. Pat answered, "It makes little difference which place, as I have friends in both places."

But the subject under consideration has not so much to do with the market or the corncrib, as the hog. And the question is like what one of the old citizens of South Salem once said to some agents who were going through the process of making soap so as to sell him the patent, and thought they had about succeeded when he said, "It is soap, gentlemen, but the question is, will it remain soap?"

There is a difference of opinion in reference to raising the pig for the feed lot or buying him, after he gets to the weight of one hundred or one hundred and fifty pounds. I prefer to purchase the hogs around me from my neighbors instead of raising them, for two reasons: First, because I think I can buy them cheaper than I can raise them; and, second, because in feeding the number of hogs that I do, the space is too small or my experience too limited, to raise the number of hogs that I wish to feed. I know that it is a generally accepted opinion among the farmers that you can raise the pig up to one hundred pounds cheaper than you can feed him to the next one hundred pounds. This is not my experience, and to illustrate, I would say, that it has never been tried by any government to raise soldiers from babies from the wholesale, and if they did they would be disappointed.

It seems to be nature's way to raise one litter of pigs, one calf, and one boy, in one place. In the selection of my hogs for the feed lot as far as breed is concerned, I prefer a cross between the Poland China and the Magee. The Duroc Jerseys, Chester Whites and other well-known breeds do well. but I have found the cross spoken of, to put on two pounds to the others one pound per day. While the Duroc Jerseys and Chester Whites have some very good qualities, I always prefer the breed named if I can get them. I find that when you take a hog, especially for winter feeding, that weighs one hundred and fifty pounds, you have no trouble to get him to a point that will give you a favorable return for the expense put on him.

When I begin to arrange to fill up my feed lot, the first sanitary precaution that I take is to inquire, both by telephone and personal conversation, as to the prevalence of any diseases among the hogs throughout the neighborhood. If I find any such rumors in reference to diseases, I give that neighborhood a wide berth, going on the saying, that an ounce of prevention is worth a pound of cure. I believe the only solution to the hog cholera question is (although government officials offered, and still offer, a reward of fifty thousand dollars to any one who will discover a remedy for hog cholera), the plan explained to me by the chief veterinarian at Washington City some eighteen months ago and tried by the government in one of the counties of Iowa several years ago, is for the government to appoint inspectors and when any disease is reported, inspect the victims and if they are condemned have them slaughtered and burned, the government losing two-thirds and the owner one-third. After the government had spent about thirty thousand dollars in one county of Iowa in the experiment mentioned the project was abandoned, not because it was successful or unsuccessful, but because the people failed to co-operate with the government. They went so far in some cases as to drive the inspectors away with the shotgun. If we are to have successful wiping out of hog cholera we will have to co-operate with Uncle Sam. And we will at all times find the old gentleman ready, willing and waiting.

When I have a hog condemned to die, my method of dealing with it is to load it in an old buggy and to take it to the fertilizer company at Washington Court House, Ohio, and have it cut up, and find the cause of its death. I never bury a hog on the farm or allow it to remain there longer than I can burn it or haul it away. I attribute to this rigorous "house-cleaning" my success in evading hog diseases.

The first consideration with the hog is to keep him alive. To do this and to get him ready for the slaughtering pen, you want to keep his hide clean, his stomach sweet, and his lungs good. If you do this and throw in a little corn, the pig will do as the Irishman's wife did. The minister who had prevailed upon Pat to go home and sober up, met him a few days later at the depot and inquired, "Pat, what did Mrs. O'Brien say to you the other day when you went home drunk?" With a twinkle in his eye, Pat said, "Mr. Livingston, I went home and straightened myself up like a true Irish gentleman (that I am), and said 'Good evening, Mrs. O'Brien,' and she said the rest."

The clean hide will receive the first attention. The hide is simply the outside of the inside and the stomach is the inside of the outside. When I salt my hogs, which I do three times a week, while they are eating, I throw salt broadcast on their backs. The result of this is that they get the salt with their food which seems to be the proper way to have it and what salt remains on the hog forms a brine that destroys the lice. By this means of salting I get a better result from the fattening of the hog and at the same time rid him of lice which is one of the worst pests of the hog lot.

For the lungs you do not want any dust. The best way that I have found to keep rid of the dust is to feed in the open with something for a wind break and give the hog shock corn. This will result in his having plenty of roughness and at the same time will give him a good bed. In fact I never feed a lot of hogs in the winter but that I start them with corn and fodder. Several weeks ago I butchered; I opened the stomachs of the hogs and the arrangement of the corn and fodder in their stomachs was a revelation that more than convinced me of the value of fodder for winter feeding. I feed them besides the salt, but not on the same day, wood ashes with nothing mixed with them. This, with the salt, seems to keep the hog's stomach in a first-class condition. This theory is confirmed by a letter from W. A. Henry, of the Wisconsin Experiment Station, to the *Breeders' Gazette*, on "wood ashes." He says, "No doubt wood ashes serves several purposes with the pig. In the first place it furnishes mineral matter, such as potash, lime and soda, which are the natural constituents of the animal's body, entering largely into the bony frame work. The alkaline character of the ashes corrects digestive troubles in many cases. Again the gritty character of the ashes may often serve to kill intestinal parasites."

The difference between summer and winter feeding is nothing, in my opinion—the conditions are about as favorable in one season of the year as the other. Whenever I read in an agricultural paper the assertion of some writers that winter feeding does not pay, I think of what a young lady said to a young minister as he walked home with her from the service one morning. When he, wishing to show his contempt of his congregation, remarked that he had preached to a congregation of donkeys, she replied, "I noticed that you called them brethren, and I thought you would never get done braying." I think these agricultural writers are just braying. I think what we do not know about the hog business will make a bigger book than what we do know.

This last summer I fed several hundred bushels of scorched corn. I weighed both hogs and corn. The hogs put on two pounds per day, which you know is doing exceptionally well. I think if we understood the proper scorching or parching of the corn, we would get better results and keep the hogs healthier at the same time. If I do not have wood ashes, I make log heaps or brush heaps in the feed lot and burn them to get charcoal, in the place of wood ashes. In the summer time I sometimes burn the corn cobs which also gives satisfactory results. The charcoal seems to be better than stone coal because it is softer and seems to correct the acidity of the stomach and give the hog new life.

I have a hospital where I put the sick hogs. I put them in this pen and do not give them anything to eat but a little milk until they get able to come for their feed.

We use the water fountains where we have no running water. These help to keep the sanitary conditions up where they ought to be. If you will give the hog plenty of clean water to drink, a good bed to lie in, not too much corn, salt over his back, and wood ashes, you will have no trouble with his refusing to eat. Theory is all very well, but what we want is something practical. As I said in the beginning, we are living in the corn garden of the world and the three requirements for successful hog feeding are the hog, the corncrib and the market.

Will you permit me to tell you of my experience in hog feeding last winter? The corn crop was a failure. I had no hogs and no money to buy them with and the market was as blue as indigo. It is a trite saying that the harder the conditions, if we overcome them, the more certain we are of success. With an empty corncrib, an empty purse, no hogs and an indigo hog market, we may well say that the prospects were gloomy. But an American is nothing unless he has grit. To get my hogs I had to have money. In investigating the money market, I found it the closest in all my experience; I found that some of my friends were selling their government bonds to get money to make their investments. But, as our old friend, David Crockett, says: "Be sure you are right, then go ahead," I went to my banker and when he asked me how much money I thought I could get along with, as my investigation into the money market had made me rather timid, I named about one-third of what I really wanted. He said that he would accommodate me, but he hoped I would get along with as little as possible, as people were calling every day for money, people who had never called before, were asking for sufficient money to pay for the corn that was being shipped in from the west by the thousands of bushels. When I had got in hogs to the amount of a thousand dollars my banker asked me if I had all in that I wanted, and in timidity I replied that I had, for the present. He replied, that he was glad of it, as there seemed to be more calls for money than ever. After a good deal of hustling around I obtained the proper amount of capital necessary to complete my investment and had no more trouble along that line.

There is one point in determining the value of a hog, and that is this, if corn is worth sixty cents per bushel at the period of putting on the first one hundred pounds of a hog and forty cents per bushel for the next hundred, there seems to be no question, at an average margin of ten cents a bushel for feeding the corn instead of selling it, that if the feeder will show the nerve to hold on, he will, unquestionably, receive five cents a pound for those hogs in the near future.

In reference to the time of selling hogs, prices for the last twenty-three years show, beginning with the first of January, the bottom of the market, gradually rising until sometime about the first of March, and then declining until in June they reach the low ebb and then drop down to the low point, generally reaching it about the first of December. This year the low point was reached on the tenth of December. I, therefore, endeavor to market my winter's feeding about the first of March and my summer's feeding about the first of October. The last twenty-three years, also, taking the summer feeding, including the eight months from the first of March to the first of November, shows an average price of hogs in that eight months of twenty-eight cents per hundred higher than in the four winter months generally called the packing season. In this hog deal of last winter, although the coldest in the last thirty-five years but one, I made ten pounds of pork to the bushel of corn, the corn costing me forty-five cents per bushel, and I realized a fraction over sixty-eight cents per bushel out of the corn after it was fed to the hogs. The man that I bought the hogs of did not get the market price for the corn that he fed to the hogs, but I did, and that is why I received such a large price for the corn I fed. The average weight that I put on the hogs per day was about nine-tenths of a pound. I bought the hogs at an average cost of four dollars and thirty-six cents per hundred and received for them five dollars and twenty-five cents per hundred at my own scales, putting on fifty-nine pounds in sixty-three days on three hundred and fifty head of hogs.

The hogs averaged one hundred and sixty pounds each when I began feeding them and of the three hundred and fifty head, I only lost one hog from the third day of December to the twenty-ninth day of February, and that was a pig that only weighed seventy pounds, and it was smothered to death in a hole next to the straw stack by another hog lying up against it and shutting the air from it.

In conclusion, I would say that if you commence with a clean bill of health, give salt every second day in the week, wood ashes every second day, not too much corn and plenty of good water, in summer feeding with clover, and in winter with corn fodder and keeping your stock clear of dust, you have about done for the hog cholera and cannot fail to receive a good profit on your investment.

FEEDING HOGS FOR PROFIT.

BY R. G. HOWELL, CASTINE, OHIO.

[Read at the Independent Farmers' Institute held at West Manchester, Preble County, February 20 and 21, 1905.]

The subject of raising and feeding hogs for profit is one that should interest every farmer, as I believe there is more clear money made by the proper care of hogs than from any other commodity raised on the farm. The first point that I wish to mention is, the wonderful improvement in the hog of today as compared with the hog of a half century ago. About a half century ago or more, the common hogs of this country were generally large and coarse framed animals, and did not reach maturity until about two years of age. The farmers saw the necessity of a stock of hogs that would come to maturity earlier and make more meat in proportion to the feed consumed. The breeders learned that different countries, with few exceptions, had hogs with certain peculiarities, so they set about experimenting as to what would bring them the best results. They were not many years in effecting a change of the old common stock of hogs to the hogs of today. The most important improvement was effected by crossing the old-fashioned, large-framed, slow-maturing hog with the China, a hog of smaller frame, rapidity of growth, early maturity, and having great aptitude for putting on fat. The China hog of itself is a very unprofitable animal; the object desired was to get a mean between the China hog and the old-fashioned, large-framed, slow-maturing kind, and the breeders have been very successful, for the American hog of the present day rivals that of any other country for size, beauty and aptitude to fatten at any age, and I believe the majority of the American farmers take more pride in their fine hogs than in any other stock. Very few countries can compete with the United States either in number or quality of hogs and I believe the cross with the China has done more in reducing the roughness of the hair, the enormous length of carcass and ears, and adding compactness, early maturity, and to fattening qualities than have all other breeds.

Now, I wish to speak of the kind of hog that I deem most profitable to raise. The qualities most desirable in a hog are compactness, early maturity, and the greatest weight obtainable at an early age. In this country we have several different kinds of excellent hogs to select from and I do not believe you will miss it very much in selecting from any of them. I might mention some of the most noted kind, such as the Poland China, Duroc Jersey, Improved Chester White, the Berkshire, and others. In raising hogs for quality, I would prefer the Poland China, but for the greatest number, the Duroc Jersey, or the Chester White will do better. If you are raising hogs to make a public stock sale for breeding purposes, then you will have to keep the pure blooded animals, as a graded hog is not eligible to register, but if you are raising hogs to fatten for market, some good cross is what you want. There are several kinds that make excellent crosses. I prefer the Poland China and Duroc Jersey. The Poland China is, as a general rule, a heavy hammed hog and the Duroc Jersey a heavy shouldered hog and by getting a cross of the two you get a more uniform hog and when it is fattened out you will have a picture of beauty. I prefer the sire to be the Poland China and the dam Duroc Jersey, as I believe the Duroc Jerseys make the best mothers.

Having determined the kind of hog most profitable to raise, I wish to speak of the best time of year to have the pigs come. I believe where a farmer will fix good warm quarters for early pigs, there is more clear money in having them come in February or the first of March and pushing them along for market at the close of the summer trade, about the last ten days in September, than any other time of the year. By so doing you grow and fatten your hogs during the nicest and warmest season of the year and avoid the winter care of them. Last September, I bought and shipped several carloads of February and March pigs that averaged over two hundred pounds each at five and one-half cents per pound. I also bought and shipped several carloads in November, of April and May pigs, that averaged over two hundred pounds each at four cents per pound, so you can readily see that the early pigs have the advantage over the later ones, by getting to market in September, for the September market, as a general rule, is better than November.

I know several farmers that have large hog houses arranged with large windows to let plenty of sunshine in and with stoves in them for cold weather for their early pigs, but if your buildings are not arranged for early pigs, June or July is a good time to have them come and fatten them out at the close of the winter market. In this way, however, you can raise only one litter a year, but you are not at very much trouble or expense in raising them. By having the February or March pigs you can raise two litters a year; the second litter you can have come in September and these you can fatten out the following spring or summer.

Having determined the best time for the pigs to come, I wish to speak on the best plan of feeding them. For the early spring pigs, I would advise feeding some soft feed at first to the mothers, such as scalded bran with milk or cooked oats and corn, to be fed along with a little raw corn and let the mothers have fresh water. As soon as the pigs can begin to crack corn well, arrange a pen so they can get in and out and feed them shelled corn in this pen. Do not overfeed them at any time, hogs will thrive better when they clean up their corn and squeal a little after their feed when you go to feed them. I have been in feed lots this winter where the ground lay covered with corn and found the hogs all stalled on their feed and apparently not gaining anything. For the digestive organs there is nothing better than plenty of charcoal and wood ashes with a little salt. For winter shoats that you have kept for spring and summer feeding, as soon as you can get a little blue grass or clover for them let them have it, for there is no stock food any better blood purifier than our native grass. As to the best time of year for feeding, I prefer summer feeding in preference to winter feeding, but I would advise plenty of shade and water, and a good clover field and sufficient corn, and you need have no fear but what your hogs will do well.

As to the best time of year for marketing your hogs, I would advise at the close of the winter market and at the close of the summer market, the highest price is not reached every year alike, but as a general rule the highest price at the close of the winter market comes somewhere from the last half of February to the first half of April and again the highest price at the close of the summer market is reached somewhere from the middle of August to the last of September, so these are two good periods in the year to have your hogs ready for market.

I wish to say here that by feeding a carload or more of hogs on a clover field each year, you keep up your farm, and you can get no better fertilizer. I have seen good results in raising grain for five years after hogs had been fed.

There are many other things that I would like to speak of, but space will not permit it this time.

HOW TO MAKE THE DAIRY PAY.

BY J. A. LATZER, DELTA, OHIO.

[Read at the Farmers' Institute held at Delta, Fulton County, February 8 and 9, 1905.]

How to make the dairy pay? Stop for a minute and think what that means. We find from statistics that the value of the milk produced in a single year amounts to three hundred and seventy million dollars. It exceeds every other branch of industry. Surely in such a big industry the competition is keen and there are many to whom the dairy nets not a profit but a loss, but if it does net a profit to all, then some must make enormous profits. As one goes about the country and sees the different methods employed, one wonders in amazement how some dairymen can clear enough from their dairies to keep the wolf from the door. We, however, delight in saying that conditions are rapidly changing, and the average dairyman of today is an intelligent man.

Did you ever stop to think how many people are of the opinion that the work of a farmer is merely hard labor, and if one is able to do hard labor, success awaits him on the farm. We are glad that this is not the case. You all undoubtedly have heard people say, "That man is not successful as a merchant, he had better go out on a farm, that is all he is fit for." Such a man may be successful on a farm, but the probabilities are that he will not. Take the intelligent and successful farmer of today and he has more things to contend with, more intricate problems to solve, and more use for his thinking apparatus than almost any business man in town. Not even the average farmer realizes the opportunties that are before him and that there are certain scientific principles, which, when employed, will yield rich returns in any of the branches of farming. In diversified farming the problems are even more numerous than when one devotes his best efforts to but a single branch of agriculture. It is only a few years since it was thought ridiculous and a waste of time for a young man to go to college and study to be a farmer.

You will pardon me, if I refer to a little experience of my own, that will illustrate this point. After I had been in college for a year, one of our neighbors happened to ask me what I was studying at college and I informed him that I was studying to be a scientific farmer—I was taking a course in Agriculture. He remarked, "Well, do you think you will be able to do any better than us old fellows who have been at it for years and barely make a living? Do you think you can make it rain when a drought comes on, or order those pesky chinch bugs to leave the country when they are killing our corn?" This man evidently did very little reading and much less studying about the work he is engaged in. To be sure a man cannot make it rain or control the atmospheric conditions, but he can preserve the moisture in the soil. Let me tell you that in a few years, that kind of a man will make no success, for the fertility of our soil will soon be gone and the old methods of farming, merely putting the seed in the ground and a little later going out and reaping a big crop, is no longer a paying business; the crop will be very small and of a poor quality, and that means a poor price. But the man that knows his business and keeps studying his conditions and employs the scientific principles so well worked out by different scientists, I say he is the man that is going to be the future farmer and the successful dairyman. It is not my intention to advocate what is called book farming, but to call your attention to those facts that we meet with every day and know not how to take advantage of. They are so large that we cannot see them. Space is too limited to go into full details of the scientific principles on which men have worked for a lifetime, but we want to get an idea of some of the most important points. First, let us study the barn, for to a dairyman that is really the beginning. I remember distinctly at the Illinois State Dairymen's Institute a year ago, one prominent member remarked, "You can talk all you please about your good herds, about scientific breeding, about feeding balanced rations, care of the cow and even care of the milk, I say all this is for naught, your dairy will not yield any profits if you are going to shelter your cows on the leeward side of a barbed wire fence and let them use snow for bedding. Yes, I dare say more, your high-bred animals would probably die under those conditions." A good warm, well-lighted and well ventilated barn is absolutely necessary on a dairy farm. Why should this be necessary? Let us see. The animal's body is kept at about a certain temperature, and this is done by supplying warmth, by providing warm quarters, and also by the dissimilating or katabolic process which the tissues, and also the assimilated portions of the food, undergo. In plain words the body can be compared to a boiler. Coal is fed into a boiler and heat is produced. With the animal the feed that is taken into the body, burns, in a certain sense of the word, and gives off heat.

Now, we know that on a cold day it takes a great deal more coal to keep a house warm than on a warm day, especially is this true if the house is poorly constructed and admits a lot of cold air; likewise, with the body of your animal. The colder the barn, the more feed is required for this purpose, which greatly increases your feed bill, or it may affect the flow of milk, reducing it in quantity because the cow has to use her feed to keep her body warm. We have also made reference to light and ventilation. Why should these be necessary? For the same reason that you make provision for them in your home. To insure health. Your light can easily be supplied by the free use of glass, but these windows should be supplied with some form of a curtain so that the barn can be darkened in the summer time, to provide some place for your cows where the flies will not bother them.

As to ventilation, the problem is not quite so simple, for we ought to arrange it so that when supplying fresh air, not all the warm air is taken out. We know that the warm air is near the ceiling and the foul air near the floor. Knowing this, we will find that probably the best system of ventilation is the King system. This is constructed on the same principle that makes the old-fashioned fireplace a valuable ventilator. A wooden flue coming to within a foot or so of the floor and extending out and above the roof causes a current and takes with it the foul air. The intake is also a little flue with the outside opening near the ground and discharging near the ceiling. By this method the warm air cannot escape and the cold air, as it enters, does not strike the cows. It is at once apparent that the size of the flue as well as the size of the intake, depends upon the number of cows in the barn for which it is to furnish fresh and pure air. As to conveniences of the barn, I wish to say that those things must be governed by conditions. Professor Davenport, of the University of Illinois and Illinois Experiment Station, said to a graduating class one year, "When building a barn, figure does it pay; but, when building a house, or a home, figure can I afford it." You will notice that one is a business proposition, while the other is a case of comfort or happiness.

Good feeds and good feeding go a great ways towards success. Merely putting feed before an animal is not enough. The feeder has to study the animal and must know what and how much she wants. Too many of us merely regard a cow as a machine, but remember she is a great deal more. She responds readily to kind treatment. The feeding of cows on a successful dairy farm is just as intricate a problem as the feeding of beeves, Everything around the barn should be to the cow's liking, visitors, as a rule, should not be allowed around the barn, especially not at milking time. Cows should never be run excessively, for it has a bad effect upon the quality as well as the quantity of milk they will give.

In regard to feeds there are a great many different opinions; some claiming that certain kind of feed is the cheapest and most economical and producing the most milk, others advocating something else, but what is the best and most economical feed for you to use, depends upon conditions and must be determined by you. What would suit Mr. Jones' case might not suit Mr. Smith's. There are, however, general principles which will apply to all cases and can be used in guiding you in working out these problems. The chemist tells us that the nutritive value of any feed is divided into protein, carbohydrates, fats, and mineral matter or ash. The mineral matter is used for the producing of bones, etc., the carbohydrates and fats are used for the producing of heat in the body, the laying on of fat and the producing of similar compounds in milk. The protein is used to produce muscle and the casein in milk. It can also be used for the same purpose as the carbohydrates and fats. It is, however, the only constituent that can make muscle and supply casein in milk. In its heating qualities it is equally as valuable as the carbohydrates, but we are also told that the fats are about two and a half times as valuable as either of the above. Again referring to the chemist's work, we find that milk contains all the above constituents, and common sense tells us that it should. Is not milk a perfect food, the only food of the offspring in its early life? Then to produce this perfect food, the feed of the cow must contain all these constituents, *i. e.*, it must contain mineral matter, protein, carbohydrates and fats. But in what proportion must these different elements be fed to get the best results? We always have plenty of the mineral matter, the carbohydrates and fats also abound in large quantities, the protein however, is not so plentiful and it may be necessary to supply extra protein to get the best results.

The ratio between the protein on the one hand and the carbohydrates and fats on the other, should be about as 1 : 6, or 1 : 8. Different authorities differ as to which is the best. To be sure we want an ample supply of protein, in order to have enough even when a cow is giving her heaviest flow of milk. If we have more than enough it is not wasted, for it is utilized just as the carbohydrates are in supplying the other compounds in milk, or in producing heat, but we must remember that the protein is a great deal higher in price and also, when it is utilized for the production of heat. On account of its very complex composition there is a lot of waste material and this will often overtax the kidneys and other excreating organs. As a rule, in our ordinary feeding there is little danger of overdoing the protein part, because most of our crops are rather deficient in this. We supply this deficiency by buying commercial feeds high in protein.

From this we argue that in buying feeds on the open market, we should buy feeds richest in protein and the more concentrated the less will be the expense of cartage and freight. Of course you ought to know the composition of the feeds that you are already feeding before going to any expense of getting something that might not be needed. Each one must figure out his own problems, for the conditions on no two farms are identical. In making your calculations be very mindful of the nutritive ratio. Try the narrow ratio, and try the wide ratio, and you will probably find very little difference, but generally when one tries to strike a happy medium he will get the best results. After having made all your calculations and find that you are short one or the other of the compounds, buy your concentrates accordingly, so that you will be able to balance your ration. A balanced ration is merely a combination of feeds so that we will be able to get the best results.

These "balanced rations" and the nutritive ratios may be too much of a good thing for a beginner, so I will say that this can be greatly simplified, but possibly with not quite as good results. Make two lists:

1. Alfalfa hay, clover hay, cow pea hay, oats, gluten meal, and bran.
2. Cornstover, oat straw, wheat straw, timothy hay, corn and cob meal, and corn.

The first are rich in proteins and the second deficient. In making out your bill of fare for your cows try to combine concentrates from the first list with roughage from the second, and with roughage from the first, concentrates from the second. In this way you will combine feeds high in protein with those that are low in this constituent. This is not complicated feeding and you will find that before long, you will be anxious to try more scientific problems and you will be considering balanced rations. But you must bear in mind the work the cow is performing, if she is giving milk, if she is dry, or if you are fattening her for the butcher's block. The ration should be made to comply with her work. A cow may be really a good cow, but due to lack of proper kind of feeds, she gives a very small flow of milk and we pronounce her "no good."

To be sure we are all aware that there are good cows and poor cows, some giving a larger quantity of milk, others a small quantity, some giving milk rich in butter fat while in milk of others the percentage of fat may be very low, but the quantity is no guide as to the quality, for some of the heaviest milkers give a fairly rich milk.

If your herd does not yield milk that is meeting with the requirements of your market, change it so that it will, or seek a different channel for your milk. I say change your herd because it is an acknowledged fact that the percentage of butter-fat in a cow's milk does not change with the quality of her feed, and the above mentioned method is the only known means by which you can bring about the desired results.

We are all well aware that there are large differences in the quantity of milk different cows will yield; some netting a nice profit while others are a losing proposition. I have been wondering how many dairymen there are in this community that could tell exactly how much milk each one of their cows is yielding in a year, and I dare say that there are but a very few that could rightly point out their best cows. The average farmer does not stop to consider that it would pay to do this, and that it would increase his profits if he replaced the poor cows by good ones. It is your business to know which is your best and which is your poorest cow. You ought to know just exactly what each one is doing. Those that are losing you money should be disposed of. Ten good ones will net you larger profits than twenty poor ones. I know you think it is a tedious job to weigh each cow's milk at each milking. If you have everything handy it will take but little extra time and soon you will be interested in the work, and you wonder why you did not do this before. Have a little spring scale in a handy place in the barn, a tally sheet and a pencil, and it will take but a second to do this. If you find it too much work to do it every day, do it every other day or twice a week.

Having the figures the calculating can be done at your leisure, in winter when it is too cold to do much out-of-doors; also on some farms it has been found very interesting to let the children do these problems. Let them take them to school and they will have some practical problems in arithmetic. I feel sure there is not a teacher in the rural district that would not be willing to have the children work on some of these problems. It will not only teach them their lesson in arithmetic, but it will interest the boy in the work of the dairy and will tend to keep him on the farm, where we need bright youths. Ah, let me tell you, it is not a disgrace to be a farmer, for there is not a more honorable business, one that requires deeper thought, than that of farming. A man sadly needs a college education and he needs four long years of it, and when he has completed his course he finds that he does not know any too much.

The good cow—where shall we go to get her? This is the most puzzling proposition that we meet with, for we cannot point to any one particular breed that will answer the purpose. There are good cows in any of the recognized dairy breeds, but there are poor ones as well. Even among those that we do not class with any particular breed, sometimes called "scrubs," or "just cows," we find some exceptionally good ones. A few weeks ago a gentleman from New York gave the record of one of his cows, in *Hoard's Dairyman*. This cow produced thirteen thousand five hundred and eighty pounds of milk in one year, the milk testing over 4 per cent. on the average. Her breeding was one-fourth Holstein, one-fourth Brown Swiss and the rest unknown blood. She was twelve years old and the owner never knew her value until he weighed her milk daily.

Often the pure bred stock is so high priced that one hardly feels like paying the extra amount, merely to have her name in a herd book, because that does not increase the quantity of milk in the pail. But let me tell you a good cow is cheap at almost any price. She does not take up more barn room, does not require more care, nor does it take any more feed to keep her body warm and in motion than that of a poor one. To illustrate, take two cows each yielding twenty-five pounds of milk per day and a good one yielding fifty pounds. The one only takes up half the barn room, only requires half the care and only requires half the amount of feed to keep the body warm and in motion. To be sure we are figuring in the abstract, but it is reasonable to suppose that when you figure beyond this, neither cow can produce milk out of nothing and up to a certain limit it will require just about so much feed to produce so much milk. But are you not saving considerably on your feed bill by the one good cow, and is she not worth infinitely more money?

Again we ask where to go to get good cows and how to build up a good herd? First, use your best judgment in selecting cows, then start weeding out the poor ones, raise the offspring of your best ones, but be very particular as to the sire. Remember that he is half the herd, or even more when he has been bred along certain well established lines. In selecting the sire, the record of his ancestors should be looked into, for that is your only guide. The laws of heredity generally work out marvelously well, thanks to Darwin for having studied out the law for us. The sire should be a pure bred animal of any of the recognized dairy breeds, because the breeding qualities are better established and while the offspring may not always be good, still you will find that in the majority of cases, the results will be satisfactory. Having good cows and a good sire, the chances are in your favor, that you will soon be able to build up a good herd.

The question of breeding, of properly mating the animals, is the most difficult problem of the stock men of today, especially is this true of the breeder of fancy stock, and to the breeder of fancy stock, I will say that the millionaire stockman, the rich man from the city, not a practical breeder, is the biggest curse for the business. He has the money to buy the best animals, but he does not know how to mate them and the utility of the best animals ever produced is oftentimes lost forever. Time is too short to go into this most interesting problem in detail, but remember that in mating extremes, the results are seldom good. The animals should be somewhat alike.

Having produced the milk and of a good quality, one has to study the care of milk so as to get it on the market in good palatable condition. One lot of milk spoiled means that much of the profits gone, but this question has been so ably discussed that it needs no further mention here.

There are many other questions which the dairyman needs to know and study—the value of the manure increasing the productive capacity of the soil, increasing the value of the farm and thus adding to the profits of the dairy. You cannot afford to waste any of it and in buying commercial feeds it is wise to consider their manurial value.

The growing of different crops for feed, the time to plant them, how to plant them, how to prepare the soil, which soil is best adapted for different crops and other points are of as much importance to the producer of milk as they are to the producer of grain.

A successful dairyman needs to be versed on almost every branch of agriculture. They are all so closely interwoven that he must study them all.

We are all in the dairy business for the profit, then why not let up a little on the hard grinding part and stop to think, use the brains which you are fortunate enough to possess, let them do part of the work, do the work scientifically and systematically, be ever mindful of those principles which have been successfully employed by others, apply them to your own particular needs, build a barn adapted to your conditions, study the needs of your cows and give them the best possible care, know what you are feeding and do the feeding as economically as possible. If your ration is short in any particular compound, supply the same by buying it in as concentrated form as possible. It is well to figure on the manurial value of these feeds when buying. Build up a good herd, weigh the milk daily so that you know what your cows are doing, remember that it does not pay to feed poor cows. In breeding, breed for quantity and quality. Know your soil and study the crops. Constantly try to make all these points work in harmony and be sure that in your management there is no loss; be mindful of the little things and the big ones will take care of themselves.

We are proud to say that the successful dairyman is the one who knows how to manage his dairy, who does everything in the most economical and systematic manner, who studies the scientific principles and knows how to apply them. If a man has the brain power and will make use of it, he will make the dairy pay.

THE CARE OF THE WINTER DAIRY.

BY W. A. RICE, CORTLAND, OHIO.

[Read at the Farmers' Institute held at Orwell, Ashtabula County, January 27 and 28, 1905.]

I do not propose to lay down immutable rules in this article, because sometimes circumstances alter cases and I consider it best for every person to run his own business as he best can, but we can all improve in our methods if we read and discuss different ways of doing things, and this is what Farmers' Institutes are for. There is no person, no matter how intelligent, how well informed or experienced, but might learn something at a Farmers' Institute if he would only lay aside prejudice and throw open the door of his mind for the needed information. When a person makes up his mind that he cannot learn anything from his fellow men he is standing on dangerous ground.

Very few farmers are able to carry on their business as a mere pastime. We have to work pretty hard and steadily at times, run our business for all there is in it, and get the most out of it for the sake of providing necessaries and comforts of life for ourselves and our families.

I propose at this time to tell you in as few words as possible how I have cared for my dairy cows, and if anyone has a better way, I should be glad to hear it for my own instruction. I do not claim to have reached perfection, although I have studied along these lines for a number of years.

In the first place I want good cows. What I mean by a good cow is one that will pay for her feed and give me a profit; the more profit I can receive the better. I want her for something more than a mere boarder. For ordinary years as nearly as I can estimate, counting everything that we feed at market prices, it costs to keep a cow as she ought to be kept abouth thirty-five dollars per year. So you see that in order to have a profit above the feed, she has to yield more than that amount. A cow that will give ten pounds of milk a day, on an average, for ten months of the year will produce in that time three thousand pounds of milk. If twenty pounds will make one pound of butter, she produces one hundred and fifty pounds of butter; this, at twenty cents per pound, amounts to thirty dollars. With that kind of a showing she is a loss to her owner. A cow that will produce double that amount, three hundred pounds of butter, or sixty dollars in cash, will bring her owner in a profit, and that is the kind of cow I wish to keep. I have found, however, that it is a most difficult matter to procure just the right kind of a cow.

When we have the right kind of cows, the next consideration is the care and feed. I put care before feed, because feed without care does not amount to much, especially in the winter. What I mean by care, is warm, clean, well lighted stables and kind treatment, regularity in caring for their wants, feeding, watering and milking at regular hours. The cow is a good timekeeper. She can tell when it is time for this care and she is looking for it. If accustomed to abuse or excitement at certain times she is looking for that. All these things tell in the product of the cow and a great deal more so than many people are aware of. In order to secure a large yield of milk it is quite as important that the cow or herd is handled properly, as that proper feeding should be practiced. We know of many instances where the best of dairy cows were used and where good methods of feeding were practiced and still results fell far short of what might reasonably have been expected, simply because the animals did not receive that kindly treatment which is essential if we wish them to give plenty of milk for a long time. The herd as a whole should always be moved slowly. Never hurry a cow, or strike her, or speak loud or harshly. A gentle voice and a caressing touch is quite as potent as is digestible protein. If you so handle the cows that they are fond of you, you have learned one of the most important lessons that leads to profitable dairying. The most successful dairymen are in close touch with every cow in their herds. To make the cow do her best she should be made perfectly happy. Contentment with good feed makes quantity and quality with the cow. When the cow is fresh, with a young calf by her side, you should try to take advantage of her motherhood; she gives her milk to her calf through affection and love for her offspring. When the calf is out of the way, if treated kindly by her attendant she soon turns her affection to him or her; nine times out of ten, I believe a cow will turn her affection to a woman rather than a man, on account of kinder treatment from a woman. There is an extreme in everything, however, and perhaps here is danger of one. In handling dumb brutes we should have a certain degree of firmness to command the situation, but we should not ill-treat or abuse anything, only command with kindness.

One writer has said that you should treat and talk to a cow just as you would to a lady, but that again is an extreme view, in my opinion. We allow no whips or clubs about our cow stable and we have no use for a cow dog. You very seldom find a dog that does not do more damage than good. Better use a dog made of bran, or one balanced with protein to suit the cow's appetite, and put him in the feed box for her when she goes to be milked. This suits the appetite and temperament of the cow far better.

Each cow should have a name which should always be spoken when approaching her. This one point counts for much in the successful handling of a herd. Suppose the cows are slowly filing into the barn and you see that "Kate" is about to go into the wrong stall, a quick call of "Kate!" will attract her attention and she will forget that she was about to go into her neighbor's stall to steal a mouthful of feed. If "Kate," when in the yard, is about to hook another member of the herd and just at that time hears her name called she will forget what she was going to do. It is by such methods that a herd can be gradually taught to do the right thing. It will save you many steps and at the same time bring a larger return.

We never have a kicker when we handle the cows from heifers. Sometimes they make things rattle a little when we first try to milk them, but we are quiet with them, and if we cannot persuade them to stand we make them do so. The way that we make them is this: We take a common, wide breast strap from a double work harness, wrap it twice around the opposite leg from the milker above the hock joint, pass the end of the strap through the loop and wrap it twice around the leg next to the milker and buckle it tight. We then keep still and let her have her own way for a while. When she gives up and stands still we take our pail and stool and sit directly down and milk her in a business-like manner. A few applications and we can leave the strap off and hold her with our hands if necessary. The main thing is to teach her that she is in our power and there is no more trouble about it, no abuse, no ill temper, and in a short time we are both happy, we, because we conquered, the heifer because she did not get flogged. In my younger days I put in a great deal of time breaking colts and ugly horses. I have handled and conquered some very bad ones, and my success always lay in one thing, I managed to control myself first, then the horse. I used my skill to fix him so that he had to work on himself, and, with firmness and kind treatment, patiently waited for results, which always came when he thought that I was his master and friend. In handling my cows and all dumb brutes, I have used this same principle and I have found it to work like a charm. The little Jersey cow is naturally high strung and nervous, but when kindly treated and educated she is perfectly quiet and a perfect pet. My opinion is that a person who cannot control himself while handling animals has no business with them, at least he will not find it profitable.

After good care comes feed. I have not found it profitable to feed sparingly. If it pays to feed at all, it pays to feed well. As I have said before, it is of great importance that strict regularity in feeding be observed in order to secure the greatest degree of contentment in the herd. If cows ar fed at stated intervals, they will not be worrying for food until the time for feeding arrives and if it is then given to them in proper quantity they will eat it and lie down, chew the cud, and rest contentedly until time for another meal. First, I give the grain feed, milking while they are eating. This is recommended because with some cows the milk comes more freely while they are eating that portion of their ration which has the most relish. All other feed should be given after milking because it fills the air in the barn with dust and has a bad effect on the milk if it comes in contact with it. Feeding twice a day will bring better results than more frequent feeding; give half the grain ration and half the roughness in the morning and half in the evening. Cows will soon become accustomed to this routine. No more food should be given than they will eat up clean. The cow is like a mill and we will get returns in proportion as we furnish the supply up to the full capacity of the mill. We cannot get something for nothing by way of the cow. I want a cow that is a good feeder and one that has the capacity of assimilating food. There is much difference in cows in this respect and a dainty, notional cow I do not want in the barn. When raising calves for my own use, if I find one that shows daintiness, turns her nose up at every little thing and does not take her feed regularly, I prefix "deacon" to her name, and she becomes a thing of the past.

I feed my cows more or less the year around, or while they are in milk, and think it pays. As to the kinds of feed, I do not propose to be authority. I have fed almost everything that could be had on the farm and on the market with varied results. I have fed silage for a number of years with good results, but have none this year. I could not raise it with so much water and frost and I feel the need of it very much. I consider good, matured silage, put up in good condition, in a good pit, very cheap and valuable feed for winter milk.

I believe in a balanced ration for cows for milk, although I do not claim to be an expert on that question. I have been working on a mixed ration for many years with good results. I will give you one which is my favorite feed, which is cheap and which I consider perfectly safe to feed without any bad results. Cows can be fed all winter and all their lifetime to their full limit without danger of fattening, contracting garget, getting foundered, or shortening their time of usefulness. The ration is as follows:

Hay, 10 pounds; silage, 30 pounds; bran, 5 pounds, gluten meal, 5 pounds.

This ration is calculated for an average sized cow in full milk, giving, say thirty pounds of milk per day. One cow may need, hay, 8 pounds; silage, 24 pounds; grain, 8 pounds. Another may require, hay, 16 pounds; silage, 48 pounds; grain, 16 pounds. It runs about one part hay, one part grain and three parts silage, using quantity according to the size and capacity of the cow. It is by such methodical feeding that cows return in dairy products from two to three times the cost of the food.

I try to make my cows comfortable and to keep them in good healthy condition, and to do this I have to protect them from the cold and storms of winter. I keep them in the stable all the time during the winter months, except for an hour in the middle of the day when they are in the yard for water, unless the weather is bad in which case they are watered in the barn. I would rather they would be out a little while each day when the weather is not too bad. They keep cleaner and healthier. I believe a little exercise does them good.

Now, in conclusion, I would say, we are living in an age of improvement, and of great competition, and we must keep up with the times if we succeed. We must contrive to produce the most and the best and at the least possible cost, therefore, let us work for the comfort and the profit of our dairy cows. It cannot be done by leaving them out on the warm side of a barbed wire fence for from eight to ten hours of the twenty-four. We will find in the end that any ill-treatment, or trying to cheat, or pinch the cows, will cost us dear. They will turn the tables on us and beat us in the end.

BUTTER MAKING AND THE CREAM SEPARATOR.

BY W. L. PARRETT, LYNDON, OHIO.

[Read at the Farmers' Institute held at South Salem, Ross County, December 19 and 20, 1904.]

The absurdity of living on a farm, and not having a plentiful supply of milk, cream and butter is not to be thought of. Milk, butter and cheese are things which are so common that they have almost become table necessities, taking rank with bread. However, to show that milk is a luxury, we have only to point to the facts in the case, which show that out of fifteen leading cities of the United States, but one, Boston, uses over one pint of milk, daily, per capita. If we go further we will find that the percentage of people who have none at all is considerable. Take Cincinnati, which gets twenty-five thousand gallons of milk per day, this amount allows only six-tenths of a pint per capita; Cleveland, with twenty-three thousand gallons daily, averages four-tenths of a pint per capita. You will see that the problem, in many cases, is one of not how much, but how little.

The history of milk is interesting. Abraham is said to have put butter, milk, and a dressed calf before his guests; Jesse sent David to the camp of the army of Israel with ten cheeses about three thousand years before the days of dairies, American Longhorns and ten-pound prints. We are glad that nowhere in the Bible does it state that Abraham's, or David's, or Jesse's guests found fault with the butter which was set before them, and in this we are sorry to make report that there has been three thousand years of going backwards, but still let butter makers cheer up and take heart.

In 1879, DeLaval exhibited in London the first centrifugal cream separator and prior to that creaming of milk was done by gravity, as is common to a great extent to this day. Centrifugal separation of milk is, to my way of thinking, the ideal way, for many reasons, which will be explained farther on. The machine itself, however, with its glistening tin and brilliant red or blue paint, is a very poor affair until you get some milk. First, get the cow to your liking, and to the purpose, then treat her with care and kindness, give her good clear water, wholesome feed, cleanly quarters, and you are reasonably certain to have need for the separator, and it, like the cow, must be to your fancy, and treated exactly as you would the cow. An old and experienced dairyman told me, "Never strike a cow, even if she kicks you in the eye," and that, too, holds good for the separator.

In no business on earth is there fiercer competition than among the manufacturers of centrifugal cream separators, and you have doubtless seen that fifteen or twenty of them captured first prizes at the recent World's Fair at St. Louis. You should not buy a machine, however, unless the maker guarantees it to skim to .05 per cent., and be able to skim thick or thin readily.

What is milk? It has been observed that milk is made from blood, and of necessity blood is made from the food or ration. The chemical composition of milk fat is made up of a number of compounds: carbon, 75 per cent.; hydrogen, 13 per cent.; oxygen, 12 per cent., and the different substances in the mixture, are: palmatin, olein, myristin, butyrin, laurin, caproin, stearine, diox stearine, caprylin and casein. Some of these substances melt at different degrees of heat, are combined in the form of milk fat, which melts at 87 degrees to 90 degrees, Fahrenheit. Oil meal fed to cows will lower the melting point, while cottonseed meal will raise it. Then, after we know what milk fat is, the definition of cream is, a portion of milk serum in which the fat globules have been crowded closely, either by gravity or by the centrifugal machine.

When a pail of water is swung rapidly in a circle, up and over the head, although upside down while at the highest point, the water does not fall out. The centrifugal force thus created is greater than the force of gravity. In the separator cylinder the fat, being lighter than the serum, is thrown against the walls of the bowl, but is not thrown with as great force, and soon forms a cream line on the inner surface of the liquid. If the bowl is kept full constantly from the storage tank above, the liquid in form of cream and milk must flow out in openings made for them, which is higher up the spindle for milk than for cream. Increasing the distance traveled tends to thicken the cream, and all machines should have proper appliances to increase or decrease at will of the operator. There is a great advantage in skimming thick cream, as it can be churned at a lower temperature which results in a larger quantity and more solid butter. Milk should be skimmed at eight degrees, Farrenheit, below blood heat or a trifle warmer, say on an average of 90 degrees, Fahrenheit, to get the best results, and may be churned sweet or ripened by one of several plans.

Great progress has been made in most countries in the handling of cream and milk, but in some parts of the world none has been made since the beginning of the world. Cream is still put into skins, and a horse hitched to it, and the whole dragged on the ground until the butter or grease comes. This is the method among the Chinese in the western part of the empire to this day. A good barrel or box churn cannot be improved upon, and it should have no machinery on the inside. The grand prize butter at the World's Fair was made in one of these, from cream soured with a commercial starter. Butter is not pure fat, but is a mixture of which the following is an analysis of average samples: Fat, 84 per cent.; water, 12 per cent.; salt, 3 per cent; casein, 1 per cent. When we churn properly ripened cream, the fat gathers into granules from which the buttermilk can be drawn off and the residue washed with clear cold water to get rid of milk serum. Butter making is an art, and three things are necessary to obtain best results. First, good, rich cream; second, clean workmen; third, proper tools and utensils to work with.

If you think you are an artist in that line, try selling butter packages with your name and address on each one-pound or two-pound prints, and see what other people's opinion of your claim will be.

There are many reasons why the separator, and the attending system of handling milk is far superior to any other way. In fact the enormous business of this country could not be handled in any other way, and enable one city to have six-tenths of a pint per capita, and another four-tenths of a pint per capita, because when an overplus occurs it can be used up by factory process.

The laws of Ohio say milk must contain 12 per cent. of fat, except in May and June, and the cow herself has sometimes been unjustly maligned, because of milk falling below standard, Sometimes the dairyman makes his milk good by adding cream if it is not up to the standard. In Indiana the inspectors say one must have so many Jerseys and so many Holsteins in his herd, before he can sell milk in its chief cities.

This much for the separator and its twin brother, the Babcock tester. You see there is a way, by its use, in which you may have cream off of morning's milk, good and thick, for your coffee for breakfast. You can have good sweet butter for your table free from impurities, by the working of the machine and after you once see the inside of the separator bowl after skimming, you will never forget to wash your hands and keep everything spotlessly clean, when working with the milk, and about the cows. You save all of the fat, or a greater percentage than by any other way. Your wife does not have thirty or more eight-pound crocks to wash, but instead takes five or ten minutes each morning and evening washing the parts of the machine, any one of which is light and can be done right on the kitchen table without stooping and by the range in winter instead of in the cold milkhouse or cellar. The warm, sweet milk is fed to young stock of any kind at once before the animal heat is out of it, which as a food is unexcelled by anything. This leaves you with only the cream to care for. Thus each milking is complete in itself and a finished job.

Bear in mind that it costs thirty-five dollars to keep a cow properly for one year. Do your cows pay their rent? After thorough testing, if you find that they do not, then sell and get some that will. Suppose you sell a bushel of wheat, what goes with it? So much percentage of nitrogen, and a certain percentage of potash. Suppose you sell one gallon of milk, the same is true of that. Suppose you separate the fat out of that milk and feed the residue on your farm, and churn the fat into the common product of butter, and sell that, what is the result? You have done something that is impossible to do in any other single product on the farm. You cannot sell an ounce of grain, an egg or any animal without selling with it nitrogen and potash, two of the very essentials of farm fertility. But sell a pound of butter, and not a grain of potash or nitrogen goes with it off the place. The lesson is, then, practice farm dairying and sell a product which does not take from, but actually adds to the farm. One might go on indefinitely on this interesting subject and find much matter for discussion; there is no question as to the magnitude of the business or of the profit, for if it is followed successfully it will take you on your vacation or send your daughter to school, and put the best and most wholesome food on your tables.

In the United States today there are seventeen million one hundred and five thousand two hundred and twenty-seven milch cows. These cows, if put in line and allowed ten feet of space each, would make a line thirty-two thousand four hundred and fifteen miles in length or would form a procession, ten abreast, from New York to San Francisco.

BUTTER MAKING ON THE FARM.

BY MRS. LINNIE BEACHAM, NEW LEXINGTON, OHIO.

[Read at the Farmers' Institute held at Rehoboth, Perry County, January 30 and 31, 1905.]

In this age of books and public discussion, it is difficult to say anything new. Originality is well nigh impossible and I can truthfully say that it will not be attempted in this paper. Some may think that any one can make butter. Perhaps, but it is not every one that can eat it.

To be a successful butter maker requires physical strength and it also requires intellect and the power to use it as well. Farmers and farmers' wives have the best opportunity of equally developing the brain and muscle. I admit that we, as a class, do not always exercise brain and muscle proportionately. Butter making is no new fad or art, but one of the necessities of life, butter having been used from the earliest times known to history.

Pick up any farm paper and notice the difference in the price of country butter and creamery butter. I do not like to see this difference. While on some farms excellent work is done and a choice article is made, which brings a fancy price, yet through ignorance of correct methods of manufacture, and of the demands of the market and through carelessness, the great bulk of farm-made butter fails to bring the price it might, which means loss to the farmer. I have an uncle who was in the grocery business and he had a good customer who would, each week, bring his butter to the store, but my uncle never tried to sell it, as it was scarcely fit for soapgrease. Finally, he decided he could not stand the loss any longer and he must tell the man not to bring in any more butter. He did so with the best grace he could, and the man said that he knew his wife could not make good butter. He did not stop dealing at the store, as was expected, but he never brought any more of his butter. I happened in a store last summer when a butter buyer came in and after examining the stock, offered about five cents less than what butter was bringing, simply because there was so much poor stuff that was not worthy the name of butter which cut down the price of the lot.

Good milk I would name as the first requisite of good butter, plenty of it and at least one fresh cow and at least one good Jersey to give color and elasticity to the butter. Good milk can come only from clean, well-fed, healthy cows. Milk should be strained through a good wire gauge or cloth strainer as soon after milking as possible, and the utmost care should be used in keeping everything connected with the dairy sweet and clean.

Then the next operation is to separate the cream from the milk. There are various ways to do this: shallow setting, deep setting, cold setting, etc. I use a machine separator. I think it not only superior to any system of setting milk, but it is a great labor-saver as well. First of all, with the perfect cream separator, comes the complete separation and the saving of all the fat in the milk which is not possible in any other way; from ten per cent. to fifty per cent. goes to waste by all setting or dilution methods. Then, as the separation takes place soon after milking, the cream is sweet, of even thickness, without taint or odor, and it is an easy matter to keep it sweet and cool until a sufficient quantity is obtained to churn and all is ripened evenly which is not possible with the old methods.

Upon the ripening of the cream more than any other single step, success or failure depends, for not only is the essential attribute of flavor dependent upon the ripening, but the exhaustiveness of the churning is also influenced in a large degree by the ripening. The principles of cream ripening may be briefly stated as follows: Cream is ripened by bacteria of the lactic acid group acting upon the milk sugar and converting it into lactic acid; through this bacterial acid the disired butter flavors, so much sought for, are evolved. It is generally held that the maximum amount of flavor that can be safely produced is reached when the cream has developed about six-tenths of one per cent. of acid. It makes but little, if any, difference whether this amount is developed in six hours or in forty-eight hours.

The rapidity with which the cream will ripen depends upon three conditions: the number of ripening bacteria present in the cream at the beginning of the ripening period; the number added in the "starter," and the temperature at which the cream is held during ripening. In order to ripen cream as fast in cold weather as in hot weather, it is not only necessary to ripen at a higher temperature, to insure a more rapid growth of the bacteria, but it may also be necessary to add ripening bacteria to the cream in a "starter," for the same reason that the housewife puts yeast into the bread to start it to rise. Never use a "starter" without first carefully examining it. If it has an unpleasant taste or smell do not use it. A bad "starter" is worse than none at all. Stir the cream occasionally while ripening; after it is ripened set it away to cool; then when it has cooled to about sixty degrees it is ready to churn. A dairy thermometer is an indispensable guide and help.

We are now ready for the churn. I use the crank churn. Some prefer one without a dasher, and I think I shall get that kind when mine wears out. The cream should fill the churn about one-half full. Churning should not be done under twenty minutes, half an hour is better. I churn at a temperature of sixty degrees, as I said. Some prefer a lower and some a higher temperature; it will, perhaps, vary a little according to your cows, what they are fed, etc. One can soon learn to tell by the sound when the cream begins to break. Then close watching is needed so as not to churn too much. If butter is churned properly no washing is necessary. I very seldom wash my butter as it destroys the flavor.

Last, but by no means least, comes the salting and the working of the butter. Even though successful up to this point, butter may be spoiled in the salting and working. Good, fine, dairy salt should be used. One ounce per pound is a good rule, I think, although tastes differ somewhat; it is wise to salt to suit customers, if possible. The object of working butter is to get the salt evenly distributed, and to expel a portion of the brine. This can be accomplished better in two workings of the same length of time than in only one. With one working there is no way of telling whether or not the salt has been evenly disributed, and if it is not evenly distributed there will be white specks or streaks in the butter. In working butter too much, as you are likely to do with one working, you are apt to injure the grain of the butter. The first time work just enough to mix in the salt. Then in about four or five hours and at a temperature of sixty degrees, after the salt has had time to dissolve and to change the color of the butter that it comes in contact with, it should be worked enough to expel some more of the water and obliterate the streaks and mottles. Such butter will be firmer and better and more satisfactory to the consumer than it usually is when worked but once.

SOME OF MY EXPERIENCES IN POULTRY RAISING.

BY MRS. ERNEST TILLSON, GREENWICH, OHIO.

[Read at the Independent Farmers' Institute, held at North Fairfield, Huron County, December 28 and 29, 1904.]

It is not my intention to give you a whole page of statistics. I shall not even try to prove the statement made by Secretary Wilson that the American hen lays enough eggs each month to pay the annual interest on the National debt. Nor shall I endeavor to tell you how to raise poultry, but simply give you some of the trials and troubles, sorrows and joys, of poultry raising as experienced by myself and others of my immediate family.

My fondness for poultry began at an early age. When I was about five years old my parents took me to the county fair. While they were exhibiting my brother at the baby show, I disappeared and when found I was gazing, enraptured, at the poultry display. So fond was I of poultry that I used to say, "When I get big and have a home of my own, I will have chicken for dinner every Sunday."

I know of no other occupation which can be combined as nicely with housekeeping as poultry-raising. It is light work and can be easily looked after by the wife or daughters.

The first few years after we began farming, our poultry efforts were a failure. Our old stock died and we succeeded in raising but few young ones. For two years we discussed the incubator question, but we were afraid that if we were successful in hatching we could not raise the chicks. After due consideration and listening to discouraging remarks from persons who had had no experience, we borrowed an incubator and succeeded in raising one chicken until about half grown, when the dog ate it. Then we were discouraged, and I said, "The old hen is good enough for me." I then set my hens to work and raised about sixty pullets. Still I was not satisfied. I felt that in proportion to the time spent the results were not all that they should have been, and that there must be some other way of solving the problem more satisfactorily. We discussed incubators again and decided that if others could use them to advantage we could. We then borrowed another, this time a new and improved one, and were so well pleased with the result that last year we purchased one of our own, a two hundred and twenty egg size, and hatched about one thousand chicks.

We think the incubator is far ahead of the hen for hatching chicks. In a series of hatches we can get about one hundred and forty chickens for each two hundred and twenty eggs set. To set that number of eggs in the old-fashioned way would require about seventeen hens. If their average hatch was seven or eight chicks apiece they would be doing exceedingly well. We can attend to our incubator with the two hundred and twenty eggs, that is, trim and fill the lamp, turn and cool the eggs, in very nearly the same time it takes to care for the hen with thirteen eggs and then we have a nice lot of chicks all of one age, which is very difficult to get with hens.

And now as to the brooder. A good brooder is of more importance than the incubator, if one can be of more importance than the other. I should like to give some of the points that I think a good brooder should possess. First, it should be so constructed as to be absolutely fire proof, especially if you intend using it in a building. Second, it must be constructed of such material and in such a manner as to be easily heated. Third, it must be well ventilated, as the health and growth of the chicks depend largely upon that. The brooders we use are so constructed that we have no fear of losing chicks if the temperature should suddenly drop to zero, or if there should be a downpour of rain. I should certainly advise anyone not intending to build a brooder house to buy a good outdoor brooder.

Now, we come to the care and feeding of the chickens. We feed them nothing for the first thirty-six hours. Then, we give a feed of hard boiled eggs chopped and mixed with bread crumbs. After this we feed a prepared chick food scattered in the litter which gives the chickens needed exercise. This food is a balanced ration and will answer all requirements for the first four weeks of their existence. After this we feed wheat, unless we wish to make broilers of them, in that case we feed johnnycake or some other forcing food. Clean water is kept before them at all times.

The heating of the brooder plays a very important part in the growth of the chick. If the temperature of the brooder is at ninety degrees when the chicks are put in it will rise to about one hundred degrees, which is the proper temperature for freshly hatched chicks. In a few days it should gradually decrease to ninety-five degrees, then to ninety degrees, and so on, until by the time they are four weeks old it has been reduced to seventy-five or eighty degrees, varying according to the season. One advantage gained by raising chicks in this manner is the freedom from lice.

In connection with this I should like to give a little experience we had the last season with this pest. As long as we kept the chicks in the brooder they were entirely free from lice, but later in the season they roosted in coops and as the work indoors required more of my attention I did not watch them as closely as before. Soon they began to look faded and seemed weak. I declared they were not lousy, and picked one up when, to my dismay, I found it alive with lice. We had been pinning our faith to a dip made from chloro naphtholeum as a louse exterminator and immediately prepared a tubful and dipped them. This is a very good remedy in most cases, and if you try it, it is a wise plan to hang your watch where you can see it and immerse each fowl for two minutes, as a shorter period of time will not be effectual. In this particular case, however, it was not of much benefit, as the lice mentioned were head lice and we disliked holding their heads in the solution. Other means had to be resorted to, to rid them of this pest. I put a few drops of the naptholeum in some lard and greased their heads. This remedy seemed a little harsh, but it accomplished the purpose.

Soon after this our fowls began to be sick with what we called cholera. This is the only disease we have had any experience with. I do not know whether experts would call it cholera, liver trouble, or bowel complaint, but we have lost some fowls in this same manner every year. I have never been able to discover the cause and would be glad if some one could tell me, but I do know it is not caused by filthy coops, as they are cleaned and disinfected every day. We have tried all kinds of remedies, and condition powders, but we never found anything that seemed to be of any use until this fall when I tried giving mercury bichloride and cured ten very sick chickens.

Now, there are, no doubt, persons who have had experience with cholera in poultry who will say, "She never cured hens sick with cholera," and I do not blame them for I should have said the same thing six months ago. This is the way I cured them. I placed the sick ones in a pen and put the medicine in their drinking water. I kept their feed in a pail so none of their droppings could contaminate it. The well fowls I shut in a yard where they were compelled to drink the water with the medicine in. I watched these carefully for indication of sick ones, which, if I found, I removed immediately. In this manner I checked the disease, and believe had I done this in the beginning, I need not have had so great a loss. It is very discouraging to get a chicken one-half or two-thirds grown and have it die, but every business has its losses.

My advice to anyone who contemplates taking up this occupation is, do not expect to find it all smooth sailing, at least this has not been my experience. You will find that here, if anywhere, eternal vigilance is the price of success. However, if you are interested in your work, and like to watch and handle poultry it is not such a disagreeable task, while in the end, the pleasures and pecuniary results seem to outweigh all trouble and hard work.

POULTRY RAISING ON THE FARM.

BY MRS. S. A. SPROAT, WASHINGTON, OHIO.

[Read at the Farmers' Institute held at Quaker City, Guernsey County, February 13 and 14, 1905.]

Our grand old county is well adapted to all kinds of agricultural pursuits. On its hills is produced a fine grade of wool; its valleys graze large droves of cattle; hill and valley alike yield bountifully to those who till the soil, while in mineral wealth Guernsey county ranks high in the state. The development of our mineral resources together with various manufacturing industries that have sprung up within our bounds, have increased our population and created a demand for all kinds of farm produce at prices far in advance of those realized a few years ago. This is particularly true of dairy and poultry products.

While many city and town people engage in poultry raising, it is the farmer who has special and peculiar advantages who is successful in this pursuit. Can you cite a single farm in our county that has not its flock of fowls? Whether it is a handsome, profitable flock or otherwise, depends upon those who own it, and care for it. There are many reasons why poultry raising is advantageous to the farmer. Where other stock is fed on the farm, much grain would be wasted if it were not for the busy, energetic American hen and her associates who see to it that there is nothing lost, and if she and a flock of turkeys are given full freedom during the summer and autumn months they will wander far afield as gleaners, gathering up fallen grain and destroying many injurious insects that would shorten grain, hay and fruit crops. In this way not only waste, but injurious matter is turned into a source of revenue in the shape of fresh eggs, tender broilers, and Thanksgiving roasts. But while our flocks gain much of their sustenance in this way, let us not be forgetful to supply their lack, and they will amply repay us for both our feed and our labor. We would all like to take stock in a gold mine that would yield us fifty per cent. annually.

The farmers' fowls are all-the-year-round revenue producers and will net him 100 per cent. on capital invested after paying for their feed. Poultry will yield the farmer quicker returns than any other department of agriculture, and can be grown on soils that will not produce fruits and cereals.

One of the chief reasons why poultry raising is so advantageous to the farmer, is that his wife and daughters can engage in it, leaving him free to till the soil, husband the sheep, feed the cattle or herd the swine, and in so doing he imagines himself engaged in a higher, more profitable business than they. Let us remember that official statistics show the poultry products of the United States to annually exceed those of the wool, the wheat, or the coal and to exceed the annual output of all the gold mines in the world. Secretary of Agriculture, Honorable James Wilson, says, in his last report, "The steady advance in poultry leads to some astonishing figures. The farmers' hens now produce one and two-thirds billions of dozens of eggs yearly, sufficient, at the high average price, to pay the interest on our National debt in one month."

"Lest we forget," in comparing the poultry industry with other agricultural pursuits let us remember the broad acres of high-taxed land it requires to graze the flocks and herds; also other broad acres of high-taxed land it requires to raise their winter's provender, and in addition to all this the animals themselves are taxed, while the great American hen goes tax free on the farm.

Remember, please, I do not want to give the women all the credit of this great and important source of wealth to farmers, but you will all acknowledge she is a co-laborer with him in this production. This is particularly true in our community. Whenever we see a man successful in poultry raising he is a fancier. He puts into the business money, time, thought, and reaps his rewards. Oftentimes the raising of poultry by farmers' wives is scarcely less irksome and monotonous than many other duties that fall to her lot. How can she take any particular pride in a mongrel or cross-bred flock that has cost her little money and no thought? She sets the eggs, from such birds knowing neither the size, shape, color or utility of the hatch, and must feed and care for them in a half-hearted way, because there is nothing in them that appeals to her love of the beautiful. In many instances, too, the revenues from such a flock never reach the purse of the woman who has labored to produce it.

I believe the poultry industry in our county would be doubled in a short time, if all farmers would adopt some pure-bred variety—the one most admired by the good wife, if she is to care for it—and then allow all the revenues from such a flock to go into her purse. It would give her an independence she would much enjoy, and in caring for such a flock she would be cultivating the beautiful just as truly as the florist whose aim is to perfect his rare flowers. Thus a former uncongenial labor would be turned into a pleasant outdoor recreation, and her purse, at least, would have a silver lining.

Both the fowls and the eggs from a flock of pure-bred hens will bring a higher price in market because of their uniformity in size and shape. Then, if you make them a study and bring them near to the standard of perfection, you will have another source of income from them you could not hope to have from a mixed lot of fowls, viz.: a fair demand for stock, and eggs for hatching purposes.

It seems almost needless for me at this time to say anything in particular regarding the housing, feeding and general management of fowls, or to try to tell you how to set a hen, operate an incubator, etc., for all of our county and farm papers devote space to these subjects every week.

While many of these articles are helpful to all who are raising poultry, yet they do not rouse the enthusiasm as do some of the beautifully illustrated poultry journals that are growing more numerous and more beautiful each year and are creating a widespread demand for fine poultry of all kinds. Then, too, the articles written for these journals are from our most successful poultrymen. Who can look at the feathered beauties pictured in them without wishing for some like unto them? Who can attend such shows as we are having every winter in our county seat and come home without some germs of hen fever clinging to him that will develop in the happy springtime? While poultry journals and poultry shows are doing more than all others for this industry, there are other factors in the business that are steadily advancing and gaining favor. Incubators and brooders are multiplying rapidly, increasing the income of the poultrman, making it possible for him to raise the early broilers that bring the highest price and the early pullet for winter laying.

The cold-storage plants in our large cities have been a great benefit to the farmers—buying up the surplus poultry and eggs in times of over-production and saving them in good condition until the supply is less than the demand.

Thus, prices have become more uniform throughout the year and much has been saved that was formerly almost lost to the farmer.

Besides having a good home market in Guernsey county, we are within easy access to Pittsburg, which, in addition to being a great consuming center, is also a great distributing center of all poultry products. Recently in looking over a market report of a single commission house in that city, which handles about three hundred cases of eggs daily, I noticed that fully ninety per cent. of those eggs were credited to states west of Ohio. What are Ohio and Pennsylvania doing in allowing these eggs to be shipped in from the west? Grain cannot be produced quite so cheaply in Ohio and Pennsylvania as in the western states, but the poultry products of these two states sell at higher prices than do those of the western states.

The market is expanding every year beyond the capacity of the poultrymen and farmers to reach. With a business last year in excess of two hundred and ninety million dollars, still there were millions of dozens of eggs shipped in to us from other countries. A million or more emigrants who are largely non-producers, came to us last year, add to them the natural increase of our population and we need fear no over-production of poultry products.

Is it not high time that we were waking up to our opportunities, doubling our diligence and our capacity in this direction? If need be, let the farmers abandon some other agricultural pursuit that is not paying them well, taking up, with their wives and daughters, this industry and increased propsperity and happiness will be ours.

TURKEY RAISING.

BY MRS. J. J. MYERS, WOODLYN, OHIO.

[Read at the Farmers' Institute held at Williamsport, Pickaway County, January 18 and 19, 1905.]

It is a notable fact that of all the birds and animals found on this continent by its discoverers, the turkey is the only one that has been domesticated, has increased in numbers and become of great commercial importance. The buffalo, the elk, the moose, and nearly every other food-producing animal or bird native to our shores has disappeared entirely or has been driven to remote places, while the turkey is found everywhere, and its value is increasing with every passing year.

When well managed, nothing on the farm will be found a better paying investment than the turkeys. Not only do they bring in a good revenue, but are of greatest value to the farmer in ridding the place of so many pests in the way of bugs and worms. They eat much less grain than chickens, for their choice food is bugs and grass or clover, as long as they can find them. The first point in raising turkeys is selection of breeding stock. Well selected individuals of some one of the several standard varieties will give better results than can be obtained by cross-breeding, which has a tendency to bring to the surface the weak points of both sides of the cross.

My choice is the White Holland. When I commenced raising them, they were considered a small turkey and they were small when compared with the bronze turkeys. They have improved, however, until now at maturity the gobblers weigh from twenty-five to thirty-five pounds, and hens from fourteen to twenty pounds each. They are more domestic than the bronze turkey, and are more easily kept at home. The large breast and juicy meat make them a choice bird for table use.

The bulletin on turkeys sent out by the Department of Agriculture gives some very good rules for the selection of breeding stock. The first is, "Always use as breeders turkey hens over one year old. Be sure they are strong, healthy, and vigorous, and of good, medium size. In no instance select the smaller ones. Do not strive to have them unnaturally large." Second, "The male may be a yearling or older. Do not imagine that the large, overgrown males are the best. Strength, health, and vigor, with well proportioned medium size, are the main points of excellence." Third, "Avoid close breeding. New blood is of vital importance to turkeys, better send a thousand miles for a new male than risk the chances of inbreeding. Secure one in the fall so as to be assured of his health and vigor prior to the breeding season. As the wise farmer selects the very best grain for seed so should equal care be given to the selection of breeding stock in turkeys. The best raised on the farm should be reserved for producers."

When we stop to consider that the male turkey is one-half of the entire flock, we may be led to greater care in his selection. None can be too good for the purpose, constitutional vigor is of first importance; without this he cannot have any value, whatever, for the purpose intended. Plenty of bone, a full, round breast and long body are important.

As the season for laying comes, I find it best to shut the turkeys in a yard, first to avoid cross-breeding with neighbor turkeys, and, secondly, to have nests where I will get all the eggs. In this climate they, and especially young hens, often begin laying so early there is danger of the eggs becoming chilled if left in the nests over night. With one wing clipped, four-foot poultry fence will keep them nicely. I keep them in the lot where the nests are, giving them some grain and plenty of water until between three and four p. m., when I turn them into the yard to eat grass until roosting time, when they go back to their dry lot. It takes them only a few days to become accustomed to the routine and if you forget to look at the clock they will remind you of the time with their voices.

I try to set several hens at a time and usually set a few barnyard hens on turkey eggs, at the same time, giving all the young turkeys to the turkey mothers to raise. I prefer setting all under turkey hens, but find that in shipping out eggs, as I do, part of the hens must be kept laying so as to be able to fill the late orders. It takes the eggs from twelve to twenty-four hours longer to hatch under the barnyard hen and the chicks do not seem quite as strong at first. In setting the hens I fasten them in the nests so the others cannot disturb them, taking them off once a day for food and water. They do not want to eat much, but are soon back at their nests, ready to be shut up for the day. Three times while setting I dust them well with the real Persian insect powder. I have tried other powders on the market, but do not find them as good. When the turkeys hatch, I powder the hens well with the insect powder and put each by herself with her brood, give them a good coop, dry and well protected from the storm, with a run about 4x8 feet, where the young turkeys can be kept until big enough to fly over the sides, which are about a foot high. The most difficult part of turkey raising is to know how to care for the poults, to know what to do and when to do it. All that can be learned from others or from reading will not be of equal value to one year's actual experience in caring for them. Constant vigilance for the first few weeks is the secret of success in this business.

A great many persist in rearing the young with barnyard hens, which are very contrary when compared with the turkey mothers. Turkeys raised with hens do not learn how to range with the flock and, as a rule, do not develop as well or as quickly, as when they range and pick up the living their natures demand.

The first few days I feed the young turkeys hard boiled eggs, mashed, shell and all, light bread dipped in water or milk and the moisture squeezed out so it will crumble. I feed four times a day, but never more at a time than they will eat up clean. A turkey chick is easily overfed, which is almost certain to cause bowel trouble. It should be noted that any food left over to become soured is like that much poison when fed to young turkeys. As the days go by the diet may be varied with screenings, cracked corn, curd and always plenty of grit and good water, so provided that they can only get their beaks into the water. Until the poults are at least a week old they must be kept separate from all other fowls except their mother. They are inclined to follow anything that is moving. When a week old they may be allowed to run in the yard after the sun has dried the grass, but they should be under shelter early every evening. If kept free from lice and dry at all times, they will thrive. When from three to four weeks old they have learned to follow the mother and may then be driven to the fields after the dew has dried off, but should be started home early, as the mother moves slowly with them, and likes to have them hovered early in the evening. They take very careful watching until full feathered and able to fly up to roost. Until then they should not be allowed out in the wet, for a hard shower is very likely to mean death to many of them. As I said before, constant vigilance is the secret of success. We must not allow any chance interruption for the first few weeks.

From the time the young turkeys are able to go up on the roost until the frosts cut off their natural food supply in the fall, they need little or no attention. During this time they live principally on insects, grass, clover and the scattered grains they can find in the fields. When the weather grows colder and these food supplies get scarce then some grain must be provided. When we consider that they bring, in the market, from two to three times as much per pound as hogs or cattle, the little corn it takes to fatten them is certainly well sold. There is no other kind of live stock that will return so large a profit to the successful producer as will poultry and no kind of poultry is more profitable than turkeys when properly handled.

Let me quote again from Bulletin No. 200, of the Agricultural Department, "The census of 1900 shows that, with a little over five million farms in the United States, not much over sixty-five hundred thousand turkeys were produced. Among the states, Texas is in the lead, having produced almost six hundred and fifty thousand turkeys. Following Texas, come Missouri, Illinois, Iowa, Ohio, and Indiana, in the order named. The state of Rhode Island produced less than five thousand turkeys. It may be remarked, however, that if all the turkeys were of such good quality as those produced in Rhode Island, their value would be nearly doubled and they would return correspondingly greater profits to the growers. It is quite as easy to grow turkeys of superior quality as it is to grow those of inferior quality. Rhode Island turkeys sold at retail in the markets of New York City and Boston during Thanksgiving and holiday week of the past winter for as high as thirty-eight and forty cents a pound, while other turkeys could be bought at twenty to twenty-five cents. This gives some idea of the willingness of people to pay a good price for the best.

"The chance for profit in the production of turkeys is gradually improving as a result of a more general use of the flesh. They are now used, not only for roasting, but to an increasing extent as cold cuts for sandwiches, and for salads, and large numbers of poults are used for broilers. Late hatched poults do well for this purpose, and, while there cannot be much opportunity for growing poults to maturity when they are hatched late in the season, they may be sold for broilers at a good profit. No dish is more valued in our large cities at the present time than the broiled poult."

When the President proclaims
   That the time is near at hand,
When a note of glad thanksgiving
   Should go up throughout the land,
When the flowers have all faded,
   And the birds have ceased to sing,
When the crops have all been garnered,
   Then the turkey becomes king.

Bronze, he may be, rainbow colored,
White as winter's driven snow,
Black, as Erebus at midnight,
Buff, as bright as sunset's glow.
Shade of plumage does not matter,
Size is counted everything.
If he only fills the platter,
Then the turkey becomes king.

When we celebate Thanksgiving,
In a mansion or a cot,
If a turkey's on the table,
We're contented with our lot.
And we praise the Great All-Giver,
For each good and gracious thing
It has pleased Him to give to us,
Then the turkey becomes king.

PROPER METHODS OF PRUNING.

BY GEORGE H. WRIGHT, R. R. NO. 2, SEVILLE, OHIO.

[Read at the Farmers' Institutes held at Creston, Wayne County, January 16 and 17, 1905, and at Wooster, Wayne County, February 10 and 11, 1905.]

So much has been said on the subject of pruning that there seems to be very little territory that has not been thoroughly discussed, and yet fruit growers differ very radically both in theory and practice. Cultivating a growing crop of any kind would be discouraging work if we did not have in our own mind one or more good reasons for doing the work. The same rule holds true in regard to pruning an orchard. The best of standard works on fruit recommend great caution in pruning or trimming all kinds of trees, especially plum and peach, and within the last few years a revolution seems to have taken place in this regard. More knowledge is required to prune properly than to cultivate properly.

I think we have learned that either in the vegetable or animal kingdom, where man assumes control, nature yields the scepter and leaves the work for him. In the cultivated orchard this work is left largely to man, and we have already learned that pruning is not only beneficial, but natural, not only for removing an unnecessary wood growth, but also as the most practical means of preventing the excessive production of pollen, which, we have learned, if left unchecked soon exhausts the vitality of the tree. This last reason has received, I think, many practical tests and practical men have asserted that the theory is correct.

In pruning an orchard, there are three things to be considered; First, form; second, quality; third, quantity. In caring for an orchard the first few years, or until it arrives at full bearing age, especial attention should be given to the form, having in your mind a well-defined idea of what you want to produce. In the past I think there have been great mistakes made in leaving too many main branches, thus sparing the rod and spoiling the child, or, in other words, not pruning sufficiently during the infant growth of the tree. It is also necessary, in pruning, to know the habits of growth of each variety of trees, as well as the special environment of each individual tree. In pruning young trees we should strive to develop the best framework to support the leaves and fruit, and pruning should be directed to secure the proper distribution of leaves and fruit. We strengthen the stem by cutting back, bringing the head of the tree nearer to the ground, giving the sap a less distance to travel and forming a thick and succulent trunk. I would cut back my peach trees after planting in the spring from the nursery, to a single stem, removing all branches close to the stem, and then cut the one stem about one foot above the point from where I want the lowest branches to start. The strong auxilliary buds will then develop into vigorous shoots.

Then I would, at intervals through the growing season, prune out or run off all unnecessary shoots that are liable to be cumbersome to the tree in future years. The next spring a strong branch with an upright tendency should be selected as a leading shoot, the side shoots should be cut back two-thirds, the leader should be kept somewhat longer and trained so that other branches will be given off from it, but not in such quantities as to prevent the sunlight from shining all through the tree. After the tree comes in full bearing, the chief object is to secure the best fruit in moderate quantity, and if the mistake has been made of leaving too much wood in the past, it becomes necessary to practice severe cutting back, not only of the present year's growth, but sometimes much more, in the latter case remembering to cut back to a crotch, to avoid leaving an unsightly stub. The best time for doing this work is after the severe winter weather has passed and before bloom commences. But where there are extensive orchards to prune, and not sufficient capital to employ a large amount of labor in the spring, then I would say winter pruning in mild weather is the best, and in large orchards that is the season most convenient.

When the winters are not very severe, the roots are collecting a certain stock of nourishment during the whole of autumn and winter. When a tree is pruned in winter this whole supply goes to the remaining branches. Winter pruning of fruit trees tends to encourage the growth of wood and the building up of the tree generally; while summer pruning, done in June when the leaves are two-thirds grown, assists greatly in the production of fruit. I think that we should especially avoid pruning at that period in the spring when the sap is in full flow, as the loss of sap by bleeding is very injurious to most trees, and, in some cases, brings a serious and incurable canker in the limbs. I admit, further, that it is not wise to let any part of nature lose too much of its life blood by amputation. Large limbs in orchards that have been neglected are best removed during the warm winter days, using judgment so as not to make too large a removal, as it is liable to bring about too great a shock to the vitality of the tree, and should be practiced only when necessity requires.

In pruning the plum I would always prefer the winter, rather than wait until the foliage comes out or the blooming season has passed. When a plum tree is pruned after blooming season is over, wherever a branch is cut back, several weak shoots will start where only one should come. Where it is necessary to prune a plum, it should be done in the middle of the winter season, as it is dangerous and very injurious to prune after the sap has started in the spring. The heading back of the shoots which have made an over luxuriant growth during the season should take place usually in February. Those shoots should be pruned back from one-half to two-thirds of their growth by making the cut as small as possible just above the bud (not too close or too far above), bearing in mind that leaving a bud on the inside tends to produce a straight top, while the outside bud will make more of a horizontal growth.

The cherry should be pruned but very little. Pinching and shortening in may be practiced to produce a compact, spreading top. I should not prune a cherry in winter; it is apt to form gum in the wound and cause decay. In starting a cherry tree or an apple tree, the head should be formed farther from the ground, say from three to four feet, as the habits of those trees are much different from the peach or plum.

In pruning the apple in winter, warm days should be selected, after the severity of the young winter has passed away, especially in climates where the thermometer is liable to register several degrees below zero. Winter pruning of enfeebled trees will give them a stimulating vigor, if done judiciously, and in mild weather, causing the cell development to become larger by increasing the nourishment in a less number of branches. An apple tree may often be trimmed in summer to advantage, especially if inclined to run to wood growth, as summer pruning will have a tendency to produce fruit buds. If young trees are pruned in early winter, especially in a northern latitude, the ends of the shoots will die back, and if the wounds are exposed will not heal over as readily as if pruned later in the season. The best time is late February or early March.

I should treat the pear in every respect the same as the apple. Yet, I would prune the dwarf pears even more than the standards, for if left without pruning the roots become over-burdened, and the trees die prematurely. I should prefer early spring, but sometimes it is wise and necessary to do it in winter, on account of lack of time in the spring. As I stated before, fall or winter pruning is said to develop the growth of the tree.

In pruning the grape, no specific rule can be given that will be satisfactory to the beginner. Good judgment and practical experience alone can furnish a correct guide. It is safe to say that the great majority of persons leave too much wood, the fruit is crowded too much on the vines and does not receive air and sunshine enough for well developed and well ripened fruit. Only wood enough should be left to fill the trellis, and the bearing canes. I should cut back to two eyes, keeping the vine within bounds and not allowing it to overgrow the space marked out for it. Pruning is intended to produce stocky growth and good fruit buds, and all excessive buds should be removed before the leaves start, then the vines should be pinched off after they have extended six or eight feet. There are many different ways to trim grapes, but all are based on the one theory.

Next, I would refer to the red and white currant. Those bushes bear their best fruit on the wood that is two or three years old, or more. After a branch has borne several crops it is best to remove it, because the younger wood will bear larger currants; therefore, I should cut out the wood as it becomes too old for profitable bearing. It is also well to shorten back the young branches and to cut out the weaker ones. The black currant differs somewhat from the red, from the fact that you will get your best fruit always from the fully matured wood. Hence you must mature good trees and then keep away suckers, and they will endure for a number of years without replenishing. The currant should never be allowed to produce suckers, and, in order to insure against this, the superfluous eyes or buds should be taken out before planting the cutting. When the plants are placed where they are finally to remain, they should always be kept in the form of trees, that is to say, with single stems and heads, branching out eight or nine inches from the ground. The after treatment is of the simplest kind. If you desire berries of an extra large size, stop or pinch out the ends of all the strong growing shoots about the middle of June, when the fruit is two-thirds grown. This forces the plant to expend all its strength enlarging and maturing the fruit.

For the gooseberry, regular and pretty liberal pruning is absolutely necesary. No suckers should be allowed to grow. In November, the winter pruning should be performed. The leaves then being off, it is easy to see what proportion of the new as well as the old wood should be taken away. And I will just remark that it is quite impossible to obtain fine gooseberries anywhere without a very thorough thinning out of the branches. As a general rule, it may safely be said that one-half of the head, including old and young branches (more especially the old, as the best fruit is borne on the young wood) should be taken off, leaving a proper distribution of shoots throughout the tree or bush, the head being sufficiently thinned to admit freely the light and air. In tree form it should not grow more than six or seven years; a succession of young plants should be kept up by striking some cuttings every season.

When a fruit tree is too luxuriant, employing all its energies in making vigorous shoots, but forming few or no blossom buds and producing no fruit, root pruning has the effect of at once cutting off a considerable supply of the nourishment and the leaves, losing part of their usual food, are neither able to grow as rapidly as before, nor to use all the nutritious matter already in the branches. The branches, therefore, become more stunted in their growth, the organizable matter accumulates, and fruit buds are directly formed. The energies of the tree are no longer entirely carried off in growth and the returning sap is employed in producing fruit buds for the next year. Enough of vigor should be left in the tree to support its fruit crop. It is generally found that a single pruning will bring them into a permanently fruitful condition.

ECONOMIC ENTOMOLOGY.

BY THEODORE W. DITTO, R. R. NO. 1, DELPHOS, OHIO.

[Read at the Farmers' Institute held at Delphos, Allen County, February 15 and 16, 1905.]

Entomology treats of all members of the animal kingdom known as insects. They may be recognized in the adult stage by the possession of a segmented body and but six legs, and are commonly known as bugs, bees, flies, wasps, etc.

This science is frequently divided into systematic and economic entomology. The former deals with the classification and identification of species, while the latter takes up the life history and habits, together with methods to be used for the control of species which are found upon plants or other animals. It may be said that insects have an existence where any other animal or plant life may be found. Their abundance is greater than is commonly supposed; the number of individuals of a single species occurring in one year is almost beyond computation. Comstock says, "Not only are they numerous when we regard individuals, but the number of species is far greater than that of all other animals taken together. The number of species in a single family is greater in several cases than the number of stars visible on a clear night." We do not appreciate their importance until they have imposed an excessive tax on our farm crops, and then not until it is almost too late to apply a remedy that will be of any appreciable benefit.

At the last two or three annual meetings of the State Farmers' Institute and Agricultural Convention much time has been devoted to the discussion of methods and means of controlling insect pests and fungous diseases. This shows that there is an increased demand for information regarding the care of orchards and other farm crops to prevent the losses caused by these pests which seem each year to be on the increase. A prominent authority on entomology has said: "It seems as if the bulk of the farmers were still unaware of the extent of the loss they sustain in this direction ,while well informed men who put enormous stress on the fact that by certain processes they can save one-tenth of one per cent. in the butter-fat in their milk, seem utterly unable to realize a loss of 10, 15 or 50 per cent. in the productive capacity of their pastures, meadows or grain fields, as long as there is no total devastation."

This drain upon our farm and orchard crops, which goes each year to the support of insects, may be partially avoided if we will but make use of the measures which have been so often recommended. Were it not for our insectiverous birds and the beneficial forms of insects it is doubtful whether we could control many of the pests that now work considerable injury to our crops. Several different preparations have been recommended for use in combating the insect pests and fungous diseases of our fruit trees and the small cost of treatment is hardly worth noticing when the increased yield is taken into consideration.

In 1901, Dr. W. I. Chamberlain, of Hudson, Ohio, reported a crop of apples from his orchards, which had been carefully sprayed, that brought approximately three hundred dollars per acre, while neighboring unsprayed orchards failed to produce anything like a fair crop. What we want for use in spraying our different crops on the farm is preparations that can be prepared with the least trouble, used with the least expenditure of time and money, and will produce the greatest beneficial results. The preparation used must be one which will control or destroy the insects, or fungus, without injuring the foliage.

The problem of dealing with insects becomes a complex one when we take into consideration the different stages of their life, history, and their habits of feeding. As to their food habits, some species bite or chew their food, while others obtain their food by piercing their host plant and sucking the liquid matter therefrom. If we know the manner in which the insect procures its food, we may then be able to prepare the remedy to check its ravages. For instance, those with the biting mouth parts are controlled by spraying with some form of the poisonous sprays which poison the foliage and thus kill the insects feeding upon it. For those with the sucking mouth parts the contact sprays must be used, as nothing would be gained from poisoning their food plant. Kerosene emulsion or the whale oil soap solution will answer for most soft bodied insects and some species of scale insects, but for other species a stronger solution must be used, and for these such a spray as the lime-sulphur-salt solution, or crude petroleum is recommended. Sprays which are intended to kill by contact must be carefully and thoroughly applied in order to cover every portion of the infested plant.

We can mention but a very few of the many insects that are injurious to our farm crops. Perhaps no insect has become as widely known as the San Jose scale, which is almost universal in its distribution and food habits.

It was first brought to the attention of Ohio fruit growers in 1894, and in 1896 had multiplied so rapidly as to force itself into prominence and cause many persons to appeal to the State Entomologist for information and aid in combating it. Within ten years after its first appearance within the state it had spread into almost every county and was found not only infesting orchards, but ornamental and shade trees of our cities as well. The original home of this insect is in northern China, but it was introduced into California about thirty years ago on plum trees imported from Japan. The name given to this scale comes from the San Jose valley in California, from which place infested trees were shipped to New Jersey in 1887. From the latter state infested trees were unknowingly distributed to Ohio and surrounding states. The only way the scale insect can be scattered is on infested nursery stock which is introduced into new territory, or carried in orchards from one tree to another on the feet of birds. But where it once gets a foothold it requires strenuous efforts to get rid of it.

The reason for its being so injurious is on account of its multiplying so rapidly. Unlike most of the scales, it does not reproduce by means of eggs, but gives birth to living young, as many as four generations being produced in one year. Observations made by the United States Department of Agriculture show that a single female will, during her short life of three months, produce about four hundred young, and as these also will reproduce other young when six or seven weeks old and continue for six weeks, the progeny from one female in the spring will, during the sumer season, amount to about two billion individuals. The scale which we see on the tree is not a part of the insect, but is formed by it as a means of protection under which it lives. The spray most highly recommended for this scale is the lime-sulphur-salt solution, though crude petroleum has also been used with very good results, where care was used in applying, but it is more severe on the trees than any other material used.

To prepare the lime-sulphur-salt solution, one must have an iron vessel of sufficient size to prepare it in. The material used is at the rate of fifteen pounds each of lime, sulphur and salt to every fifty gallons of water. The lime must be slaked in a small quantity of water, then while being well stirred the sulphur should be gradually added and also the salt, until the mixture forms a thin paste. It should now be diluted to about twenty gallons and boiled for about two hours, then strained into the barrel or vessel used for spraying and sufficient water added to make the quantity up to fifty gallons, and applied to the trees while hot. Thus prepared, the mixture will cost about two cents per gallon. While this has the disadvantage of being considerable trouble to make, and is very corrosive if allowed to get on the hands, yet, it has the advantage of not being easily washed from the trees by rains, and also of having a very corrosive action on the scales. It must be applied, for the scale, in the fall after all leaves have fallen, or early in the spring before the buds burst, or the two sprayings may be applied in fall and spring.

There are many other scale insects which we may find in our orchards, but none have been found so injurious as the San Jose or pernicious scale. Of the more common ones we have the scurfy scale, and the oyster shell scale, which are found in most orchards on apple, pear and peach trees. The kerosene emulsion has given very good results against these pests, which are more easily controlled as they reproduce only by means of eggs. and generally only one brood per year.

Aphids, or plant lice, is another group of insects which we find very abundant on almost all of our orchard and ornamental plants. They may also be found on our house plants during the winter season.

In the spring, as soon as the buds begin to open, we may find these insects hatching and feeding on the first of the green leaves to appear. The last generation in the fall deposits the eggs around the buds nearest to their source of food supply in the spring. They live totally unprotected on their host plant and can move from one place to another when necessary. Probably one of the most destructive species known is the phylloxera, which grape growers have to contend with.

To rid house plants of these pests, one of the best washes is made by steeping tobacco stems in a small quantity of water and diluting the product to strength and quantity sufficient for use. For an orchard spray: Kerosene emulsion made by dissolving one-half pound of hard soap in a gallon of boiling water, and while still boiling hot removing from the fire, and adding two gallons of kerosene, stirring the mixture violently, by driving through a force pump back into the vessel until it becomes a creamy mass that will not separate. This may require from five to ten minutes. It is then ready to be diluted with water and applied. For scale insects mix one part of the emulsion in ten parts water. For soft bodied insects one part of the emulsion to twenty parts of water. It is extremely difficult to rid a tree of such pests, as it is almost impossible to get the tree thoroughly covered with the spray, and as they multiply very rapidly another spraying must be given in a week or ten days later.

The codling moth is a very injurious pest which seems to devote all its attention to the apple. It is estimated that this moth alone causes a loss of three million dollars a year in the state of New York. It makes its first appearance when the trees are in bloom and deposits its eggs in the calyx of the flower when the blossoms are falling. It is from this position that the insect hatches and eats into the apple. As soon as the blossoms have fallen the trees should be sprayed with either paris green, or disparene, before the apples are heavy enough to drop, as at that time the spray will be more likely to collect in the calyx end of the apple, where the insect will hatch and get its first meal with the poison.

The proportion of four ounces of paris green to fifty gallons of water is recommended, to which has been added one pound of lime to prevent injury to the foliage. Keep well stirred while spraying. Disparene at the rate of three pounds to one hundred gallons of water may be substituted for the paris green. It has the advantage of not being so heavy as the paris green, and thus it remains in solution longer and is not so easily washed from the foliage. A second application of the spray should be given in a week or ten days after the first to insure more permanent benefits from it.

Our attention is also called to the canker worm, whose work in our orchards is more conspicuous than that of the codling moth, as it feeds upon the foliage and often strips the trees of their leaves in a very short time. It not only feeds upon fruit trees, but in badly infested areas, attacks forest trees as well.

The females of the moth being wingless, a good means of combating them is to band the trees and thus prevent the laying of eggs on the branches. On low topped fruit trees spraying with paris green, or disparene, at the first appearance of the worms is a very successful method, spraying again, if necessary, in from seven to ten days. Where both sprays have been used, it is claimed that one spraying with disparene (arsenate of lead) was of almost equal value to two sprayings of paris green in combating the canker worm.

The injury caused to our grain and grass crops is not so easily noticed and controlled, and the insects may be very numerous before our attention is called to them by the appearance of the plant. This is especially true of the Hessian fly in our wheat. The chinch bug in our corn fields, or meadows, may also become widespread in a very short time, yet the means of control may be more easily applied than with the Hessian fly. On a farm where a a flock of turkeys is kept they become a very important factor in controlling and checking the ravages of grasshoppers, and other insects found in meadows and pastures or wheat fields. The use of hopper dozers has been recommended by some for getting rid of the grasshoppers, and they may be of value early in the season, but when the hoppers have attained wings they will not be of so much value. Plowing under infested areas in the fall after the eggs are laid will prevent their occurrence, in a measure, in the following year.

We could enumerate many other species of insects which are injurious to field, orchard and garden crops, but the treatment in general would be the same as for those mentioned.

For the fungous diseases Bordeaux mixture is the oldest and most used remedy, especially for apple scab, grape mildew, etc. It is made by dissolving four pounds of copper sulphate (blue vitriol) in two gallons of hot water, in a wooden vessel, stirring well. As soon as dissolved pour into barrel used for spraying and increase to twenty-five gallons. Slake four pounds of lime in a small quantity of water and when slaked increase the quantity to twenty-five gallons and pour the milk of lime into the copper sulphate solution, straining through a brass strainer of thirty meshes to the inch, to remove all small particles of lime that would in any manner interfere with the spraying. Keep the mixture well stirred while using. The mixture must be made fresh each time before using and any left over should be thrown out. For apple scab, this is applied first when the buds are swelling, a second time just before the blossoms open, and a third time after the blossoms fall. With the third spraying, paris green or disparene may be added and the treatment for codling moth and apple scab be made at the same time, following with the second spraying for codling moth seven to ten days later, without the Bordeaux mixture.

For successful spraying the operator must think for himself, for while general directions may be given, they must be changed as necessary to meet the requirements in each case. The kind of material used must be governed by the feeding habits of insects for which the treatment is made. Thoroughness in spraying is one of the most essential and important elements of success and one which is too often diregarded. Spraying just at any time and in a haphazard sort of manner will not bring the best results, but the proper remedy must be applied at the right time. In a rainy season the spraying will have to be done more often than in a dry season. But under no conditions must the trees be sprayed while in bloom, as at that time bees are working on the blossoms, and as their work is necessary to the development of fruit, more harm would result than good.

New ideas and schemes are constantly coming to the front, and neighborhood co-operation in spraying is now being tried with very good results. Several such associations have been formed, especially in some of the eastern states, and very effective work is being done at less cost than spraying concerns can do where a profit must be made. For a small orchard the cost of spraying including cost of machinery, etc., would be more per tree than in a larger one. While a person could well afford to pay seventy-five cents or one dollar per tree per year for the treatment of fruit trees, yet the co-operative associations hope to get the cost down to less than five cents per tree.

THE RELATION OF LANDLORD AND TENANT.

BY G. H. BROWN, CAMDEN, OHIO.

[Read at the Farmers' Institute held at Camden, Preble County, February 24 and 25, 1905.]

As this is a farmers' organization, the audience is supposed to be more or less engaged and interested in the pursuits of farming; what I shall attempt to say, therefore, in regard to the relations of landlord and tenant, will be relative to the land owner and tenant or renter, the man who owns the farm and the man who occupies the premises and cultivates the soil.

Because of customs long established, and the inclination of the average mind to follow the same line of thought impressed upon it in childhood, there is, even in these days of broad-mindedness and tendency to social reform, a line of class distinction drawn between the landlord and tenant. We are disposed to greet the landlord in a more respectful manner, give him the front seat and in every way be more attentive to his comfort and pleasure, than toward that of his tenant.

The landlord, because of his superior intelligence and uprightness, may be entitled to these added honors, and he may not. The simple fact that a man is a farm tenant is not conclusive evidence that he is inferior either in mind, talents or character. Both the conditions are often the result of circumstances, unavoidable, so far as the individual mind could comprehend. Very often the ownership of land gained by inheritance would never have been possessed otherwise. I do not say this in disparagement of the ambitious, energetic, honest land-owner, who has, by diligence, economy, and intelligent individual effort, made for himself a home and gained a competency sufficient to justify his retirement from the busy activities of farm life; neither, as regards the landlord who shows by his earnest concern, individual interest and careful management, due appreciation of his inheritance. But I would have him understand and manifest in his dealings with his tenants, that financial possessions alone, whether they be in real estate or other moneyed value, do not make the possessor thereof superior to the man who is honestly diligently and continually laboring to the extent of his physical and mental ability to provide for himself and his family the necessiies and comforts of life and at the same time honestly discharge his obligations in relation to his landlord.

Many tenants, by diligence and wisely directed efforts, become land owners. Many land owners, because of misdirected effort, misfortune and reverses, become renters. The condition of each class may be, and often is, the result of unforeseen circumstances for which the individual, as regards censure or commendation, is neither responsible nor accountable.

In this brief effort to lift our minds above a class distinction, based solely on financial possessions, I have no desire to censure either the landlord, because of his possessions, or commend the tenant, because he is a tenant, but to bring both landlord and tenant on a common level as regards their business relations, and if there be an approach to equality of intelligence, moral character and general congeniality, aside from financial condition, I would add, social level, as well. And if there is not a good degree of congenialty in these respects, the real success of either or both in their management and cultivation of the farm is doubtful.

There must be respect for each other's wishes, welfare and opinion; a mutual willingness to yield preconceived ideas, former customs and pet hobbies, when more modern ideas and better ways appear reasonable and promise equal or better returns with less labor. In a word, there should be no big I and little you. There should be mutual effort, harmoniously expended for the best results in every line of operation, from the tenant's garden to the careful preservation and increase of the fertility of the entire farm.

With this aim in view, I think the partnership plan much preferable to either grain or cash rent. The landlord who leases his farm for a given number of years to the tenant who will pay the highest cash rental (as is almost universally the case in some localities) practically sells the land, or, at least, the exclusive use of it for said time, and the man who thus temporarily buys it, usually has but one aim in the care and cultivation of it, that is to force from the soil such products as will bring the most money, while he has possession of the farm, regardless of the future fertility of the soil, condition of buildings, fences, etc. In many instances he is compelled to follow this system in order to pay his rent and provide for his family. Where this system exists the renter, outside of feeding a few hogs, depends on selling his grain on the shippers' market, and it must be sold when the rent is due, many times to the disadvantage of the renter and always to the detriment of the landlord, in the sense that it is continually taking from the farm the fertility of the soil, without adequate return of fertilizer.

In case of exclusive grain rent, at least one-half of the production of the farm is either marketed or fed on other premises. There is the trouble of the division of all the crops and lack of fellowship and mutual interest that is obtained in the partnership plan. Grain rent, however, is much more just and desirable, in my opinion, than cash rent, inasmuch as both parties equally suffer or are benefited by the yield of the harvest. They are, therefore, mutually interested in the proper cultivation and harvesting of the crop and the added fertility of the soil, but have not the means for the manufacture of fertilizer that obtains in the partnership plan.

In the commercial world one man has idle capital, another man, without capital, has business experience. They form a partnership, and engage in the mercantile business. The capitalist puts his money against the brain and muscle of the business man. The active partner carries on the business, keeping everything straight and open for the inspection of the silent partner, frequently consulting him and willing to accept his advice, if practical. The capitalist is watchful to see that the business is profitable and if there be need of more investment in added stock, improvements, or facilities, he sees that the provision is made. The profits of the business are shared equally between the partners. Their interest in the business is mutual. And if it be a success permanently, there must be mutual respect and confidence.

This condition of business life, and the proposed partnership of landlord and tenant, are in many respects analogous.

The landlord provides the farm with buildings, fences, etc., in good repair and the land under a proper state of cultivation. He pays the taxes thereon, furnishes material for keeping up repairs, and pays one-half the cost of all live stock kept on the farm, except poultry, which should belong to the tenant's wife, she providing the care and feed and receiving the profits therefrom. The tenant occupies the premises, having the free use of all the buildings and conveniences, furnishes all farm implements, pays one-half the cost of all live stock, and performs all the work of producing, harvesting and feeding the crops. Repair work should be made by the tenant This, however, should not include new work in the way of fences, ditches, buildings, and the like. The seed to be planted and sown should be taken from the undivided product of the farm, or, if bought, paid for by the undivided proceeds of the farm. The bill for commercial fertilizer and threshing machine should be paid in the same way.

The tenant should be provided with garden and truck lot, outside of which the whole product of the farm, except the wheat, should be fed on the farm, in the way and manner that will be most profitable to both parties, including the production of available fertilizer, the fattened or finished live stock sold and the money equally divided between landlord and tenant. In the case of the threshed wheat, its fertilizer value should be returned to the farm in the way of commercial fertilizer, and ground feed, as bran, shorts and oil meal.

It must be patent to every thoughtful mind that this system of conducting the farm is much superior to the others mentioned in keeping up and increasing the fertility, hence the profits of the farm, and at the same time creating a feeling of fellowship and social equality between the equally interested parties. It will remove from the worthy, trusted tenant that feeling of inferiority so detrimental to energetic effort and buoyant hopefulness. To feel that he is not merely a subject of his landlord, but an equal partner in business is to him an inspiration to renewed and cheerful effort, and its reward will come in financial prosperity, increased manhood, and nobler ideals.

If both parties to the contract are not intimately acquainted or well recommended as congenial partners by a mutual friend, it is probably advisable to contract for only one or two years with the prospect of continuing the partnership if mutually satisfactory. Otherwise a considerable term of years is the most profitable and satisfactory for reasons obvious to the thoughtful and experienced person.

The outlines I have drawn for a partnership contract will, of course, be subject to variations in accordance with the circumstances surrounding each individual case and the environment of the parties forming the partnership. Especially is this true in regard to details.

There is yet one thought I desire to make very prominent in this proposition, that is the cultivation on the part of each party of a liberal, generous spirit, and the avoidance of exclusively selfish aims.

While in a general way the effort that is most beneficial to one benefits the other, there are minor details in which each may take advantage of the other's ignorance or restricted condition, to his profit and the other's loss. In these apparently little matters (though, in the aggregate, a vastly important matter), we find opportunity to apply the golden rule, given forth in a spirit of pure unselfishness by Perfect Wisdom, and although nearly two thousand years have rolled away since its proclamation, it is just as truly practical and applicable to the needs and real happiness of mankind as at any time of the Christian age, "As ye would that men should do unto you, do ye also to them likewise." Finite man may not be able to completely fulfill this injunction because of the long established habit of selfish thought, hence selfish action, but by the cultivation of generous, charitable thought, evolving itself into harmonious action there may be, at least, a most commendable and highly pleasing approach to the true ideal.

As a rule the tenant is apt to expect advantages and privileges in excess of the contract simply because he thinks the landlord, with his superior financial possessions, can allow these benefits without suffering inconvenience or discomfort. This thought is wrong in principle and disastrous in practice, it is a sure leader to dissatisfaction. While there is an actual necessity for the development of a generous spirit in the landlord so essential to his peace of mind and the real success of the partnership, that these occasional concessions on his part be made, the tenant should never expect more than the contracts implies.

What is true in this respect on the part of the tenant is equally true of the landlord, yet when he sees interest manifested and labor performed beyond the requirements of the contract, let him show due appreciation and acknowledge to the tenant the benefit; thereby lifting his own mental and spiritual ideal, and inspiring the mind of the tenant in a way that will be mutually helpful, both morally and financially. That the tenant should indulge the habit of grudging a few moments, hours, or even days each year in voluntary effort to preserve and enhance the beauty and comfort of the premises which are his temporary home, is disastrous to his propsperity in its broad sense, and detrimental to the harmonious relations of the partnership. The language of the great apostle, "He that soweth sparingly shall also reap sparingly, and he that soweth bountifully shall reap also bountifully," is just as true regarding the voluntary physical effort of the tenant and the generosity of the landlord in their material business relations as it is in its spiritual application.

THE LANDLORD'S SHARE.

BY E. E. GEPHART, WILLIAMSPORT, OHIO.

[Read at the Farmers' Institute held at Williamsport, Pickaway County, January 18 and 19, 1905.]

What I wish to say in this paper is in regard to landlord and tenant; the different ways of renting land; the crops; the share each receives, and I shall speak from my own personal experience and observation. In the beginning I will say there are so many things to be taken into consideration, in renting land, that there is no rule that we can always go by. We must take the quality and condition of the land, the buildings, the distance to market, school, church, all these things must be considered. Did you ever stop to think how much of the land of this section of the country was farmed by the tenant farmer? I have no figures at hand to quote from, but I will venture the assertion, that one-half of the farming land in this section of the state is farmed by the tenant and not by the man who owns the land. And you have often heard the remark, "that this would be a better country, if the large farms were divided into several small ones." Among the tenant farmers you will find some who take pride in everything they attempt to do, they keep good teams and tools, good stock, and their farming is counted up-to-date. Then again there are some whose aim seems to be to barely make a living. They are never satisfied, always looking for something better, and generally for a place to move to. And then, again, our landlords are not all exactly alike. Some of them seem to have for their motto: "Ask, and thou shalt receive," that is, "Ask the tenant for all and get it"; another goes by the "live and let live" method, which works better for the tenant.

There are several ways of renting land, cash rent, grain rent, etc. Some rent for one-third of the profit, where the landlord furnishes everything, and some farm for so much per acre. Some farmers rent for cash, that is, for so much per acre by the year, or for a number of years, as the contract may be. As I have never rented land in this way, I cannot say, from experience, how I would like it. I know some farmers who have rented this way and they contend that cash rent is the only way to rent land. They argue that by renting a farm for from one year to three or five years, they can arrange the farm to suit themselves. They can handle stock, and raise grain, and count on having more good years than bad ones. Be that as it may. On the other hand I know and have heard of men who say, "Renting Mr. Smith's big farm for cash rent is what broke me." And so it goes, some make a success, at this way of farming, while others seem to lose out and are compelled to begin over or try something else. The terms of settlement for cash rent are generally two payments per year, one due September 1, the other March 1.

I suppose most of the land in this section of the country is rented for grain rent, and is probably the most satisfactory to both landlord and tenant. When we speak of grain rent, we mean that the tenant must furnish teams, tools, half the seed, half the fertilizer, do all the work and give the owner of the land one-half of the corn in crib, or shock, one-half of the clover seed in bushel, one-half of oats and wheat at the machine, or elevator, as the contract may be. Giving one-half of all the grain raised is the custom, but after that there is quite a good deal that goes with grain rent, and out of several grain rent farmers I know, no two of them rent just exactly alike. Of course, they all give one-half of all grain raised, but where, when, and in what shape differ.

Then, there is the horse, and cow, and hog pasture, the fences to be kept up, the manure to be hauled, the clover seed to sow, the weeds to mow, the road tax to be worked. Who is to do that? We will suppose you farm sixty acres of corn, sixty acres of wheat, and there are sixty acres of clover on the farm. You will have to have two good teams of horses, and an extra one, probably; you should keep several good cows and enough brood sows to raise two bunches of pigs a year. Now, the landlord says something to you like this, "You give me one-half the corn in the crib, one-half the clover hay in rick or mow, one-half of the clover seed in bushels, one-half of the wheat, and oats at the elevator, each to furnish one-half of the seed and fertilizer; you pay me one dollar and a half per month straight time for your work horses, one dollar and a quarter per month for your cows, and fifteen cents per month for your pigs and brood sows; you keep the fences in repair, haul out the manure, work out my road tax, and sow the clover seed." I actually know of farmers who ask their tenant to furnish the clover seed. Is that right? No! But there are men asking that, and men doing it, right here in this section of the country today, and it is not all the landlords' fault, either, for there are tenants who make these kind of propositions, and of course, they are accepted.

Now, I will try and give what I consider fair for both, in the case just referred too. If the corn is to be cribbed the tenant should have the actual cost of husking at least, either in money or in fodder; if the distance to the elevator is not too far, that is the proper place to divide the wheat and oats; each to furnish one-half of seed and fertilizer. The clover seed to be divided in the bushel; the landlord to furnish pasture for the actual number of horses it takes to run the farm; the tenant to pay pasture on milch cows, hogs, and any young stock he may raise; the landlord to furnish clover seed, and tenant to sow same. And as to many other things that come up on the farm that take a man and a team to do, the tenant should be paid for the man, at least.

Another way some grain renters do is to form a partnership with the landlord in this way: The tenant furnishes the teams and tools to do the work, and the cattle, and hogs belong to each; they each furnish one-half of the breeding stock; one-half of all the feed and grain fed; the landlord furnishes all the pasture for the partnership stock, as well as the work horses, and the tenant does all the work of feeding and caring for the stock; and when there is a load of cattle, or hogs, or stock of any kind to sell. except horses, each takes one-half the proceeds. This seems to be a satisfactory way to some who have tried it.

The ways I have explained are only a few of the many ways of renting land and the different contracts made.

Many tenant farmers do not pay enough attention to live stock. They expect to keep enough horses to farm their crops, enough cows to furnish milk and butter for family use; some do not raise hogs enough for their meat, and depend solely on the grain crops raised. This, I think, is a mistake. Besides raising some hogs every year they should raise a few good calves and colts of the right type, and here I would like to impress on the mind of the tenant, as well as the owner of the land, the use of good stock. Get the best; it is none too good. The difference in price between a pure bred sire and a scrub is so small that any tenant can afford to pay it. Raise the right kind, they eat no more than the poor ones, and then it is some satisfaction to raise and feed them, and a profit in the end.

In conclusion I will say, give the landlord his just dues; try to build up his farm instead of letting everything go to rack. Do some of the little things for nothing, rather than have your neighbors and the passers-by make remarks about your carelessness, for if the renter expects to own a home of his own he must have the help and good-will of the landlord.

FENCING AND FENCES.

BY FRANK P. MILLER, LANCASTER, OHIO.

[Read at the Farmers' Institute held at Bremen, Fairfield County, February 15 and 16, 1905.]

In presenting this paper I feel that I owe some apology to the man who has lived upon a farm all of his life and is familiar with all the phases of such a life, who knows the pleasure taken in a farm well-kept and the trials connected with keeping it well.

This is a subject with which every farmer has more or less to do and one upon which, I am aware, there are many differences of opinion as to when, how, and what. When shall I cut my posts? How shall I set them? What fencing shall I use?

In traveling through the country you may see fencing, fences and still other fences, some good, some wobbly, some down. The farms would be more attractive in some places were there no fences at all. I have tried very hard to follow the advice of an old writer not to "tell it all," but I have a conviction that this is one of the subjects which need to be more thoroughly aired.

Bad fences are a source of much trouble, while good ones have the reputation of making good neighbors. This in itself should be a reason why we should look well to our fences and keep them in order. Jeremiah Rusk said: "Show me the farmer's fences and I will tell you what kind of a farmer he is." While we may not quite agree with this eminent authority, a product of our own state, and while we have seen many, very many, notable exceptions, the fact remains that many of the farm operations depend quite largely upon proper fencing, and the lack of it may be an index to the character of the man and also indicative of the manner of his directing his farm operations.

Fences have been used in this country, in one form or another, ever since man engaged in the pursuit of stock raising. Among he first were those made of stone, rails, boards, pickets, etc. These have been or are rapidly being replaced by the newer and more up-to-date kinds. The kinds coming into general use today are the barbed wire, woven wire and the different wire fences to be made on the ground where they are to be used.

Barbed wire has been used quiet extensively, but it is no doubt nearing the end of its service, since at the present time the woven wire alone, or in combination with the barbed wire, is coming more into use. In the purchase of wire fencing three things should be kept in mind; how much does it weigh to the rod, what is the quality of the wire, and is it well galvanized?

The number of styles of woven wire fences on the market may be counted by the dozen. In a recent number of one of our leading agricultural papers there were eighteen different kinds of fences advertised. The most of them claimed to have all the points most desired in a wire fence. Some were constructed on correct principles, some were not, but failed to say so, some said the farmer had a right to doubt all claims until proven, and all they wanted was a chance to prove their merits. All were anxious to send out catalogues. I believe the manufacturers know what qualities are most desired and when you find these qualities all combined you will make no mistake in investing.

To the small farmer, or the farmer who finds time weighing heavily on his hands the wire fence to be made on the ground has points that recommend it; first, it may be made of heavy wire throughout; second, the horizontal wires may be more easily drawn to the same tension, many of the woven articles being faulty in this respect; third, they are more easily and satisfactorily erected on uneven ground. The fence chosen by the twentieth century farmer seems to be the woven wire fence, with or without barbed wire, and it has many points that recommend it over the fences of the past. It does not blow over; it takes up very little space; it harbors no briars or weeds; it requires fewer posts; it can be moved very quickly if desired, and a large amount may be erected in a day by two men, depending, of course, upon the lay of the ground, how the men work and the tools they have to work with.

My ideal woven wire fence should have these three points: It should be made of wire of good quality, tough and strong, so as to hold the crimp or coil; it should be a fence that adapts itself easily to uneven ground; it should be so made that the stays may be slipped on the horizontals. The reason I give for this last point is that in case of a slack wire it may be pulled out, and unless it is pulled out it will be impossible to make a perfect job.

Corresponding to the foundation of a building are the posts which are necessary to the construction of the fence. The cost as compared with the durability of the post is the thing to be considered when making the selection. A substitute for wooden posts is now being introduced in the form of cement posts. They are claimed to be fire,-rot and rust proof and any farmer can make them at a cost of less than twenty cents each. The molds are partly filled, then the wires are laid in, then the molds filled nearly full, two more wires laid in, then filled. They are molded face down. Unlike the wooden posts they improve with age.

Next to the material is the manner of setting the posts, especially the end posts. There are several ways of doing this all of which have been illustrated in the agricultural papers. My advice is, do not set an end post until you have fully made up your mind to set it right, and are sure in your own mind that you have found the best way. The end posts should be very large and of the most durable material, and should be braced so as never to give, since upon the end posts depend the life and usefulness of the fence.

In putting up woven wire fences, the tools are a very necessary part, for without good tools we are likely to botch the job. I prefer the stretcher that I can pull either at the top or at the bottom as may be desired. The clamp bar that clamps each wire separately has advantages over one that clamps all at once. In the former case if one wire gets tighter than the others it may be let slip a little while the others are still held tight. Each set of tools should include a hand stretcher to finish from clamp bar to end bar. Wire pliers and staple pullers combined are very handy tools. You should also have gas pipe for unrolling which you can hitch your horses' traces to, or you can hitch the coil behind your wagon and drive to the other end of the fence, when you are ready to stretch up the fence. If the ground is clear of snags or stumps, I prefer to pull on the ground until the fence comes up to place. If it be over a hill it can be pulled just as easily by making an "X" out of boards as high as the fence, putting an "X" at each of the highest places. Slant the "Xs" back so that when the fence comes tight the "Xs" will be straight and hold the fence up to the posts. When crossing low places pull straight across, then pull, or weight down. A small block and tackle is very handy where you can get a good root to fasten to. If you have a very abrupt bank to go over, you would better cut it down before setting posts as your fence will look better and it will save trouble. Always have a post at the highest, and another at the lowest, point. Anchor the low ones, or they will pull up. If you have hardwood posts do not forget to grease your staples; this is to save your time and thumbs. It will pay you to practice staple driving some rainy day.

I have heard it said that he who invented the process of making wire will be freely admitted by Saint Peter at the gate and will be honored by one of the most exalted places in the celestial realm. He certainly was a philanthropist and his invention has made the pathway of many easier to travel. Untold are the uses of wire! We mend our harness; we fix our singletrees; we tie our hay; we hoop our barrels; we use it for telephones, cables, lightning rods, for the modern fence.

But in extolling the virtues of wire and the fences made therefrom, we should not forget the old rail fences and the manufacturers of them. I really believe they were happier in their simple life than we of the present day. Can we feel any prouder of our two hundred rods a day of a wire fence than they of their three hundred or four hundred rails cut from a virgin forest? If you think so just ask some old rail splitter to tell you his story and note the expression of happiness and interest that plays upon his face, the animation of his voice, and the exultation which shows in his every movement. Yes, the old rail fence with its sinuous worm is fast falling into decay. The squirrel which frisked so happily along its winding way and the robin that builded her nest in its protecting corners have sought other homes and other playgrounds, and the vines and violets are no longer found along its shaded course. Nor have the children the old "teeter" board upon which they were wont to ride up and down, up and down, making the woods and fields resound with their merry laughter. But the spirit of energy, industry, honesty and integrity, which imbued the old fence builders, still lingers near the scene of their triumph and inspires the present generation to better manhood and nobler womanhood.

PRACTICAL EDUCATION.

BY A. SHIRER, DAYTON, OHIO.

[Read at the Farmers' Institute held at Vandalia, Montgomery County, January 18 and 19, 1905.]

There was a time when the young man learned a trade; now the demand is for industrial education. There was a time when girls learned housekeeping under the supervision of their own mothers; now the demand is that cooking, sewing, etc., should be taught in the public schools. There was a time when the boys and girls planted corn on their father's farm; now many a teacher spends his precious time endeavoring to instruct the rural children concerning planting corn and potatoes, trees and flowers. All these innovations are because the grange and farmers' clubs, agricultural conventions, and horticultural associations, boards of trade and commercial clubs have demanded a change—a change for so-called practical education.

The query arises, what is a practical education? Article 3, Ordinance of 1787, says: "Religion, morality and knowledge being necessary to a good government and the happiness of mankind, schools and the means of education shall be encouraged." Our fathers of 1787 took the view that education is knowledge.

We all have heard again and again that knowledge is power. Therefore, education should give us power to perform our various duties.

Horace Mann, the renowned educator, said: "The object of the public schools is to lay a permanent foundation upon which to erect a well proportioned superstructure." Mark carefully these words, "The public schools should lay a permanent foundation." A permanent foundation for what? For agriculture? For medicine? For law, etc.? Most assuredly the public schools must lay the foundation for all vocations. Or, in other words, universal education may be compared to a tree rooted in the public schools. This educational tree should first produce a good size trunk. Then the branches of law, medicine, agriculture, etc., appear. Finally, these prominent limbs should develop the smaller branches of horticulture, dairying, stock breeding, etc. The question is, when shall our educational tree begin to produce limbs and how soon shall these limbs be encouraged to produce branches?

We may look upon the cooing babe as it lies in the cradle and imagine what possibilities are hidden there. But I am glad that we cannot predict whether that boy is going to develop into a lawyer, a doctor, a farmer, or a minister. It is not safe, at the age of fifteen, to announce the future vocation of that boy; even the young man of twenty-one frequently has not fully determined the future course of his life.

This being an undeniable fact, what then shall our boards of education and our teachers do? All that they can do is to believe that education is knowledge, and knowledge is power. And it is this brain power that is absolutely needed by every citizen during our present century if we do not wish to become abject slaves to those who possess this brain power. Since genuine education furnishes brain power then all true education is practical.

There is another class that is demanding applied education. In reality this is no education at all. Parents simply wish that their children should learn a trade at public expense. No wonder some old bachelors are beginning to object about the ever increasing school tax.

Is it not more profitable to teach the young man *where* to saw instead of *how* to saw? That is, give him sufficient mathematical knowledge so that he can demonstrate by actual calculation where to saw. How many masons would be at a loss how to obtain a square corner if they should forget the proportions eight feet and six feet? How many carpenters can make only one set of stairs—according to their model? Have you forgotten what Horace Mann said, "A permanent foundation?"

Which is the more profitable for a teacher to consume the time to demonstrate which part of a grain of corn sprouts first—the root or stalk, or thoroughly study how plants live and grow? If the young people learn that all agricultural plants obtain water through the roots, and the newer the roots the more freely they imbibe; if they learn that the leaves are the breathing apparatus where the moisture escapes, they will soon form a conclusion as to which part of the corn sprouts first. Let this fundamental principle of plant growths be thoroughly drilled into the minds of the young, and they will have a permanent foundation upon which to erect a well proportioned agricultural superstructure.

Does it pay for the teacher to consume the time to show how to plant trees? Will not the young man, when he knows that new and fresh roots are the ones that imbibe moisture, remove all broken and bruised roots and make all possible preparation for the growth of new roots when he plants trees? If not, he will not have sufficient grit and gumption to take care of the trees after they are planted.

If the young man thoroughly studies from whence plants obtain their moisture, how they procure their food, then when that young man engages in actual agriculture he will have this permanent, practical knowledge that he must prepare and cultivate the soil, not merely to kill weeds, but to furnish moisture and food for the plants. This permanent, scientific knowledge is worth infinitely more than the so-called practical information obtained by actual experiment—sprouting corn and wheat, planting trees and vines.

If the young man learns that the sap of a tree ascends in the sap wood and enters the chemical laboratory of the leaves and is then transformed into actual tree fluid which descends under the new bark and thus adds cell unto cell to the already existing sap wood—if the young man learns this permanent fact about the circulation of the sap in trees and has brains enough to become an actual horticulturist, he will not saw off a young tree and insert a graft in the middle of the stub—the heart wood. If he does, the insects and birds will think faster than he does and claim the bulk of his crops.

If the young man learns that chemical action is accompanied by heat, he will have the basis for many future successful farm operations. Will this young man burn up all the nitrogen in his stable manure by stacking it around the barn or placing it in little piles in the open field?

If the young man learns that certain ingredients of food produce muscles and other portions heat, energy and fat, he has a permanent knowledge for economical feeding. This fundamental principle of food is also of vital importance to the young women.

It may give them an idea as to whether to pour hot or cold water on beef when placing it in the pot to cook. It may also suggest to mothers what to feed the children, so that we may not become a toothless nation. The glittering gold in the mouths of many young people indicates that there is something radically wrong. The young man that intends to take unto himself a wife should remember when he is calculating on the future possible current expenses that the intended bride ought to have thirty-two teeth. The dental bill at the moderate price of five dollars per tooth amounts to a snug little sum of one hundred and sixty dollars. Seriously, if we can strengthen the bones of young animals by proper feeding, can we not also improve the teeth of our children by the proper food and the proper system? Such a scientific education is worth vastly more to the coming generation than the so-called applied science when girls attend cooking schools and learn how long to heat the eggs to make a good cake. That man who has a permanent deposit in the bank and can draw a few dollars whenever he so desires is well situated financially. That man who laid a permanent foundation educationally when young has a treasure far more precious than silver or gold. He is the man who can seize the occasion.

What a great ado has been made during the last decade about nature study. Is this something new? Did not the teacher of all teachers when He traversed the plains of Judea say: "Behold the sower." "Consider the lilies." "Not a sparrow shall fall." All along the ages—even in prehistoric times—the true teacher directed the attention of his pupils to the wondrous works of God. Are not all our physical sciences—botany, chemistry, natural philosophy, astronomy, physiology, geology, physiography, zoology, etc.—nature studies? Pursue these natural sciences as sciences and not as the present superficial nature study fad.

The fact is that we as a nation are continually demanding something new and book publishers are very willing that we should annually contract this contagious disease for new things.

The president of Princeton college recently said that we cannot make a young man believe what we do not believe ourselves. This undoubtedly is true. There are some young persons who may be anxious to know what I would do if I were a boy again. I would thoroughly study spelling and defining; master arithmetic and algebra; take some English grammar; devote some time to descriptive geography, but obtain a full knowledge of physical geography; devote my leisure hours to reading history and biography; have nothing to do with the cheap, trashy fiction and not too much with the best of fiction. After I had this foundation laid I would study Latin and Greek, higher mathematics, botany, physiology, chemistry, physics, etc. All this I should try to accomplish before the age of twenty. For what purpose, some one asks. For my own selfish purpose. "All truth is worthy of study for its own sake." "To prepare us for complete living is the function which education has to discharge." Education is like religion, for your own special benefit and not for your lazy neighbor. As said before, education gives brain power. Great political, social, religious and economical questions confront us.

It will no longer answer the need of the hour to say our position is so and so because our fathers believed so. That mode of education that does not arouse in the young man or young woman an intense desire for more knowledge after graduation is a perfect failure. Will our modern demand for a so-called practical education develop this desire for investigation?

The moment a nation ceases to produce men great, intellectually and morally, that moment the nation begins to retrograde.

Improved machinery takes the place of the brain of many a laboring man. "It is man who thinks, and thinking is his highest attribute"

The demand for specialists creates a class having a one-sided education. The crank of cranks is a crank who can turn only one crank.

Napoleon, being asked which is the best cannon, gave the laconic reply: "That depends upon who is behind it." After all, whether education is practical or otherwise, depends upon who is behind it.

Let us therefore adopt the saying of Horace Mann as the motto for our public schools: "Lay a permanent foundation upon which to erect a well proportioned superstructure."

OUR FRIENDS, THE BIRDS.

BY MRS. ESTA COOVER HARVEY, LONDON, OHIO.

[Read at the Farmers' Institute, held at London, Madison County, February 10 and 11, 1905.]

Not long since it was my privilege to hear the greatest soprano singer in the world, Madam Melba. At the close of one of her wonderful selections, in which her marvelous voice was shown in its numerous variations of trills and ripples, one of our party remarked, "How perfectly clear and bird-like her tones are!" This was the highest encomium that could be given her—that her notes in a measure imitated those of a bird. Now, all about us, we can have a concert every day, "without money and without price," not connected with any operatic trust, northern or southern securities, amalgamated or consolidated corporation, or system of frenzied finance. This is always the opportunity of the farmer and his family, and indeed all classes of people are beginning to feel that we must live down some of our civilization and live up to the appreciation of what is about us. We are changing our ideas of education. It must not all be in the abstract, but something of the real and tangible. So, we are making nature study a part of the curriculum of every up-to-date school. It is not all from books, though the knowledge that others have gleaned and recorded is very helpful to us, but unless we cultivate observation and rely upon ourselves to a great extent, it cannot give us much practical benefit. Though our own knowledge may be limited, let us begin now to enlarge it and encourage all around us to look, listen and learn.

William L. Dawson, who has made such a study of the birds of Ohio, says: "The love of out-of-doors is a growing passion in the hearts of our people and the willingness of all classes to sit at Nature's feet is a most hopeful sign of the times. Nature in all her aspects is richly vocal to all her true disciples, but at no time does she speak more clearly and sweetly and in language which may be 'understanded of the people,' than in the voices of the birds."

Our Buckeye state with its varied topography is particularly fortunate in having three hundred and twenty varieties of our feathered friends. Occasionally some rare birds take it into their heads to visit us and instead of welcoming them warmly we usually, with rock or rifle, proceed to make them more rare, when in reality a live bird is much more interesting than a stuffed one. In our own county, having no large body of water, rivers, lakes or reservoirs, some of the birds frequenting such places are wanting, but nevertheless we have in our groves, flitting across our fields, alighting on our fences, cheering us with a burst of melody in our door-yards, a very delightful variety. So ruthlessly have the birds been dealt with that we are told they are decreasing, and so important are they to an agricultural people that it behooves us to say and do all that we can to protect them.

The great French scientist, Michelet, informs us that without birds man could not live upon the earth, for nine years after all bird life should have been destroyed all vegetation would cease, owing to the ever-increasing insect pests. Another scientist tells us that in one year one insect may become the progenitor of six billions of descendants. From daylight until dark, through the summer months and even in the winter by destroying insect eggs and larvae, all birds wage incessant war on these enemies of man. For every species of bird certain kinds of insects which it feeds upon is found. In this brief paper I can only take time to sing the praises of a few of the common or familiar birds, and you will readily see how important their presence is in an agricultural community. For some of the statistics I shall give you, I am indebted to Professor F. E. L. Beal, a noted ornithologist, connected with the United States Department of Agriculture. I shall mention the bluebird first, as it has been placed at the head of the list of the birds of America, both on account of its superiority of character and its usefulness. Bluebirds have positively never been known to do any harm and live entirely upon noxious beetles in the spring, and later upon summer caterpillars and weed seed. People should endeavor to induce these useful birds to make their home on their premises by fixing up boxes for their nests, for their great service to the farmer cannot be doubted.

We are all so familiar with robin redbreast, whose early matin song awakens us to the duties and pleasures of the day, that he needs no description. John Burroughs, the naturalist, says: "Of all birds the robin is the most native and democratic." No doubt you are all thinking of Mr. Robin in your cherry tree and wondering what excuse can be offered for him. We admit, he eats some cherries and small fruits, but an examination of three hundred and thirty stomachs shows that over forty-two per cent. is animal matter, principally insects, earth worms and wire worms, while the remainder is made up largely of small fruits or berries; forty-seven per cent. being wild fruits, which man never gathers for his own use, and possibly only four per cent. being cultivated fruits. So surely the insects destroyed, and in this way, the robin's efforts to save the fruit, certainly entitle him to a small share. Robins also eat many cut-worms and other insects from the ground.

Almost as common a bird among us as the robin is the woodpecker, which many have said should be our national bird from its coloring, red, white and blue, the latter color being rather a blue-black. These birds are the great conservators of forests, and to them, more than to any other agency, we owe the preservation of timber from hordes of destructive insects. They are provided with beaks and tongues especially fitted for digging out and devouring all wood-boring beetles and ants that live in decaying wood. When thought to be doing harm by pecking fresh holes in trees, careful observers have noticed that the borers and larvae are taken out, and the tree, if healthy, left without a mark. They tap the tree, or sound it, to find out just where the insects are located. They eat nuts and vegetable food also, and are certainly the only agents which can successfully cope with certain insects of the forests and orchards, and if for no other reason, should be protected in every possible way. An examination of two stomachs showed that each contain over three thousand ants.

In the early springtime we find the crow—the dusky bird—who has been given a reputation as a notorious mischief maker, but is not so black as he has been painted. He is one of the most intelligent of birds, and matches his wits against man's. Of course, it is acknowledged that he does pull up some sprouting corn, rob nests of small birds occasionally, etc., but let me tell you of the good he does. He almost raises his young on beetles and June bugs and lives entirely on grasshoppers during the month of August as do nearly all other birds. He also eats many cut-worms and spiders and, as has been said, "the facts on the whole speak overwhelmingly in favor of the crow."

Then there are the blackbirds, with their several varieties, the grackle or crow blackbird, the red-winged and the rusty blackbirds, who certainly help the farmer with his crops. They do their greatest amount of good in spring, when they follow the plow in search of large grub worms and cut-worms. Examination of stomachs of blackbirds show them to be literally crammed with cut-worms. The red-winged blackbirds are said to live principally on weed seeds, as rag weed, barn grass, smart weed, etc. Seven-eighths of their diet is made up of weed seeds and insects injurious to agriculture, so it goes without saying that these birds should be protected.

Much might be said in praise of the cuckoo or rain crow, as an insect-eating bird. An examination of one hundred and fifty-five showed that these birds are much given to eating caterpillars and do not object to those covered with hair. In fact cuckoos eat so many hairy caterpillars that the hairs pierce the inner lining of their stomachs, and when turned inside out they appear to be lined with fur. The caterpillars feed on the leaves of trees, especially apple trees. The cuckoo is therefore a most useful bird to fruit growers and nurserymen. Their work all summer long is to protect the fruit tree and they should be given every possible encouragement. They also eat some Colorado beetles or potato bugs.

The blue jay has had many accusations of a damaging character, and perhaps is guilty of misconduct along some lines, but there are good qualities also. The corn this bird is accused of eating is usually waste grain, and an examination of its stomach shows many noxious insects. Then, like the crow and kingbird, the jay acts as sort of a policeman in "birddom" by protecting smaller birds and young poultry from hawks and owls. The jay usually keeps up such a loud calling, that the farmer is attracted by it and enabled to come to the relief of young poultry, and so in this way the jay does much good.

I see I have called attention to the hawk and owl in a somewhat compromising manner, so must tell of some good qualities to compensate. They not only consume many large insects, but destroy many rats and mice, great enemies to the farmer.

This is a much "be-sparrowed" country as there are some forty varieties, as the song, the vesper, the tree, the field, the chipping sparrow, etc. The English sparrow is the "black sheep" of the family, and as to its usefulness there exists a great diversity of opinion.

The other varieties of sparrows are very useful, destroying not only many insects, but also weed seed in large quantities. They are widely distributed, and there is no part of the country in which some varieties may not be found the whole year round. Even in the bitterest cold weather they keep themselves fat on weed seed, thus reducing next year's annoying crop of weeds. Upon the basis of one-fourth of an ounce of seed eaten daily by each bird, and supposing that the birds averaged ten to each square mile and that they remain in their winter range two hundred days, we shall have a total of one million seven hundred and fifty thousand pounds, or eight hundred and seventy-five tons of weed seed consumed by this one species in a single season. As part of their food, the sparrows pick the worms, insects and eggs from the under side, and pending from the leaves of trees and plants, which is different from most birds. So no one can doubt but that the sparrow is a well-meaning and industrious little friend of the farmer. Surely "not a sparrow falleth," but that it is to our detriment.

Around houses, gardens and orchards are to be seen the little wren, of which there are several varieties. This is entirely a beneficial little bird, as it lives almost exclusively on animal food. An examination of fifty-two stomachs showed that ninety-eight per cent. of the contents was made up of insects and only two per cent. of vegetable. The wren usually rears from twelve to sixteen young in a season, so a family like this must consume many of the insects around a garden. They do not fly far away, but work very industriously near their homes or nests, and are valuable aids to orchards and gardens, and so nesting boxes should be provided for them, where they can stay and where their services will do the most good, for it does not seem possible to have too many wrens.

The meadow lark deserves some special mention from the fact that it feeds entirely on the ground and digs and picks up earthworms, cutworms, etc. In the examination of stomachs, seventy-three per cent. was found to be insects, and some of these were examined when snow was on the ground, which showed that the meadow lark has great skill in getting insects out of the ground under very adverse circumstances. This bird is a great protection to meadows, as he eats entirely harmful insects and weeds. Professor Beals says: "In the matter of grasshopper consumption alone, the meadow larks are worth about twenty-four dollars per township in saving the hay crop." This, of course, to the nation, means hundreds of thousands of dollars per year.

One word in favor of the beautiful oriole who lives on wild fruits and insects. His best work is done in eating the larvae of some of the most destructive insects known, very harmful plant and bark lice, so small and obscure as to be passed over unnoticed by most birds.

The redbirds, scarlet tanager and cardinal are not only very useful to the farmer by the destruction of insects, but how much encouragement is lent by the glorious song of the redbird, who is the chorister in the bird concerts.

"All our hopes are brighter when the springtime comes,
To hear the redbird's song of cheerful melody."

The state has taken it in hand to partially protect what some call our most useful bird, the bobwhite, or familiarly known as the quail. His name, bobwhite, comes from his ringing call and is his proper name. There is much to admire in this bird and absolutely nothing to apologize for. He frequents meadows and stubblefields, and is one of the best eradicators of chinch bugs, the great enemies of wheat and corn fields. Quails are easily domesticated, and I have heard of numerous instances where they have been made quite friendly by arranging some brush or shelter with straw for them and throwing out some grain occasionally to them in the winter. Of course, when spring comes, they can take care of themselves and they will only be met in the fields and woods, and whenever bobwhite's musical call comes over the summer meadows, it will bring back many pleasant memories of those winter breakfasts. The quail also eats many weed seeds and harmful insects, as well as chinch bugs, and, like the grosbeak, is known to eat many Colorado beetles. I firmly believe that there should be a law prohibiting enirely the killing of this very beautiful, useful and absolutely harmless bird. There are other familiar birds, as warblers, swallows, fly-catchers, phœbe and many small birds, which take their food on the wing, such as flies, mosquitoes, gnats and small insects. Then the sap-suckers, chickadees and others incessantly examine the barks of tree trunks and branches, fence rails, etc., for small worms and eggs, or larvae, deposited there.

Each bird seems to have its particular kind of work to do, and with their bright, sharp eyes no insect, be it ever so tiny or ever so well secreted, escapes them. It seems decreed, in the wise economy of nature, that birds shall do this work. It is very strange that it is necessary to ask protection for these able little workmen, or that farmers should ever complain that birds eat a little fruit or grain. When they have helped save the crop, are they not entitled to a small share of it, for without them there might have been no crop at all.

It is a most unfortunate decree that Dame Fashion has established the wearing of birds, or parts of birds, on women's hats.

The Audubon society of the state of Ohio sends out some startling statistics in regard to the slaughter of birds for millinery purposes. Five million song birds are annually required to fill the demand for the ornamentation of the hats of American women alone.

The white feathery, delicate, aigrette plumes, so much prized for decoration, are obtained by killing the mother heron on her nest, thereby destroying the whole family. Florida has almost been depopulated of its herons for this purpose.

One of the things in my past life that I never think of without a pang of remorse, is that I have to plead guilty of having once worn a beautiful white heron aigrette on my hat. I did it thoughtlessly, as I know hundreds of other women have done. Women are naturally tender-hearted and humane, but there are no chains binding us stronger than those of Dame Fashion. There are so many beautiful things with which to adorn our hats, such as flowers, ribbons, laces, velvets, gold and jeweled ornaments, etc., that can be combined by the deftness and artistic skill of those who add to the beauty of the world by making our women more handsome without adopting the custom which is both against our humane and financial interests.

Some men have given the women's hats as an excuse for their non-attendance at church. Let me read you what one writer says: "Women should take their hats off in church. No sermon can inspire a man, who is looking into a lop-sided aggregation of dead birds, stuffed weasels, squirrel tails, etc. It makes a sinner feel lost in the wilderness." So let us not be responsible for lack of spirituality on the part of our men.

It is well known that the study of the habits of birds enables one to foretell the weather and the change of the seasons. When we see the bluebirds and robins, we feel that spring is near at hand. "One swallow does not make a summer," so an old saying goes, but when you hear a little twittering company, for this bird is a social fellow, summer will soon be here. The cuckoo or rain crow predicts rain and early writers claimed that the call of the quail was "more wet," also foretelling rain. The migrations of wild geese, north and south, for change of climate, are too well known to be commented upon—going south meaning cold weather and north, warm. These birds also foretell a period of pleasant weather, for "Everything is lovely when the goose hangs high." There is an old Dutch saying, that there is never any frost after the first call of the whip-poor-will in the spring, and that it leaves before frost in the fall.

Birds have been eulogized in song and story, and many interesting poems and legends have been written about them. One of the prettiest poems in the English language is Shelley's "To a Sky Lark." In Aesop's Fables we read of a crow that assumed the garb of a peacock, but was finally brought to shame and the contempt of his fellows by trying to show off qualities that he did not possess. The dove has been deemed worthy to be the "Heavenly Messenger," and is the theme of some beautiful songs. The dove's tender, mournful, cooing tones are familiar to all, and there is a little legend as to why he always has this pensive sadness in his tone. One day Adam was walking in the garden and he saw the dove sitting on a tree. It was cooing very mournfully, as if its heart was broken. Adam said: "Poor little fellow, what is the matter?" And the dove replied: "I have lost my wife." Adam passed on, but later came that way again and saw the dove and it was still making the same doleful sound. Adam said: "What are you grieving about now, have you lost your wife again?" The dove replied: "No, it is because I have found her." And to this day the dove keeps up the same mournful sound, and you cannot tell for the life of you whether he has just lost his wife or just found her.

A beautiful poem explains why the robin has a red breast. A superstition of early days confined erring souls to a burning caldron for their purification. The pretty legend says that this merciful little bird, hearing their cries of thirst came with as much water as it could carry in its bill to relieve their thirst. It ventured so near the edge with the drops of water that the flames scorched its loving little breast, and ever since all the robins have had this same red breast, as a symbol of their sympathy.

The study of the birds is educational in many ways. It quickens our perceptions, training our eyes and ears to see and hear them. The moments spent out of doors add to our health and happiness.

We can learn many lessons from the study of bird character, disposition, industry, habits and above all their usefulness. Then there is the wealth of music and song, each bird with its own repertoire, always new and a joy forever. Let us, in appreciation of our feathered brothers of the air, learn to feel the trust and peace that inspired Bryant's lines "To a Waterfowl:"

"He who from zone to zone,
    Guides through the boundless sky thy certain flight
In the long way, that I must tread alone,
    Will lead my steps aright."

SOME LEGACIES OF THE NINETEENTH CENTURY.

BY MISS LULU MOORE, NEW LEXINGTON, OHIO.

[Read at the Farmers' Institute, held at Rehoboth, Perry County, January 30 and 31, 1905.]

All parents leave an inheritance. Some children inherit a fortune in property, others in health and others in character. Some inherit the misfortune of ill-health or bad character. It is said that from the union of two bad characters in New York, many years ago, there came nearly two hundred thieves and murderers.

As parents leave legacies, so do centuries. The nineteenth century has bequeathed the twentieth both good and ill-fortune. It has bequeathed the steam engine, the steamship, the printing press, the sewing machine, electric cars, the reaper, the mower, the binder, the threshing machine, the typewriter, the telegraph, the telephone, electric light, friction matches, the bicycle, the automobile and other inventions too numerous to mention.

The people of the old world laughed at the new. They said our American eagle was a paper bird brooding over a barren waste.

Less than one hundred years ago the people of New England thought the Mississippi river the boundary between the valuable and valueless land, beyond this was nothing but rubbish heap and salt mountains, but by consulting statistics we find that from this "barren waste" the railroads carry yearly more foodstuffs than from any other country on the globe.

Who can imagine what would be Washington's emotions were it possible for him to awake from his long sleep and take a journey over that part of the country only, which he knew so well during his life—when he should go over to old Fort Duquesne, near which place he was defeated, with Braddock, in a vain attempt to rout the Indians and French, and find there now, the city of Pittsburg, with its thousands of industrious, liberty-loving people, and see the great columns of smoke belching forth from factory and mill, settling like a pall over that busy city. What would be his feelings if he should go over to New York, where he conducted such a graceful retreat before the English during the Revolution, and find now in that same vicinity a great city, teeming with blessings and curses which rival London in every respect? What would he think of Chicago, that city whose marvelous growth outstrips anything the world ever dreamed of? If he could cross the Mississippi to that "barren waste" and view the miles of wheat and corn fields; go still farther and find Colorado whose mountains are inlaid with gold and silver, whose mines yield enough coal to supply Europe, and whose soil produces sufficient potatoes to feed all Ireland, go farther to the southwest and watch the cattle ranches and cowboys giving up their wild land and life to the settlement of the cultured emigrant in search of a home, what would be his emotions? What would be the nature of his "after chapel" speech were he to visit all of our colleges and universities—leaving out our common schools—and look into the faces of the two hundred thousand students that he would find registered there? In the face of all these things, it is safe to conclude that his feelings would not be less intense than Rip Van Winkle's after he had slept his twenty years, and he no doubt would exclaim, "Well done, thou Sons of Liberty."

Ours is truly a great nation. It was said at the close of the Civil war, which rent the nation in twain for a time, that the south would never again unite with the north and form the perfect unit it was before, but the experiences of the Spanish-American war have confuted that statement most effectually. In that war the boys of the south fought under the stars and stripes by the side of those of the north. If you watched that conflict closely you will remember that the first man to pour out his life's blood for his country was a southerner; the young man who sank the Merrimac was an Alabamian, and the son of a confederate soldier; the man who dared to plant his country's flag on the fort at Santiago was "Fighting Joe" Wheeler, once of the confederate army. So we are truly "one people, under one flag, in one country." These are only a few of the many blessings the nineteenth century has bequeathed the twentieth.

But the careful student of current events learns that it left evils, as well as benefits, the enormity of which seems to increase daily, and it is the purpose of this paper to mention only a few of those that are much mentioned in our current periodicals.

Open a magazine, and on its very first page your attention is directed to some phase of the race question, and we believe that this is one of the least problems our new century must face It is true that the negro race has increased very rapidly since the time of the Civil war. It has not gone out among its liberators as it was thought it would do at the close of that war, but is still down by the cane brake and cotton fields. However, the century has raised up a Booker T. Washington, who wise men think holds the key to the solution of that problem. When he convinces the masses that the elevation of his race to good citizenship depends on industrial as well as intellectual training, the question will be settled without doubt. Sympathy and support from a few of his white brethren will greatly assist him in the great work he has undertaken. May the time soon come when mere party shall cease to rule and many men of the Roosevelt type be raised up who shall "never consent that the door of hope—the door of opportunity—be shut on any one, no matter how worthy, purely upon the grounds of race or color, but rather may a premium be put upon the efforts of the negro race to achieve the character and standing that will fit them to hold any place of trust."

Turn over another page in the magazine and the immigration question looms up in most vivid colors. The Chinaman has been excluded, it is true, and why? So far as I can judge, by reading, it is because he communes with his ancestors alone and makes no progress in the world. In spite of this very undesirable characteristic in his make up, he still possesses some character which cannot be said of many other immigrants.

For the last twenty-five years the average yearly influx of foreigners to our country has been three hundred and fifty thousand. Among them have come the assassins of King Humbert and President McKinley, and others of their ilk. Patterson, New Jersey, has become the noted hotbed of anarchy as the result of their coming. Just three years ago one hundred and twenty thousands of these people came from the slums of Italy with tags on their backs announcing that they were never to return. A noted lecturer in speaking of this not long since said: "They should be made to face about and tag back home."

Immediately following the subject of immigration is the city problem, and this problem is really beginning to assume grave proportions. For at the end of the next one hundred years there will be ten million more people in the city than in the country if the rate of migration increases in the same way as in the past century. This means suffering at both ends of the line. In the city it means over-crowded tenements, increase of slum districts, a multiplication of vice and crime. In the country it means a decrease in power to produce the actual necessaries of life. Even now, in many communities, farmers know what it is to have their crops waste for the lack of laborers to help gather their harvest. and they have, of necessity, begun to retrench.

Methinks I hear some hoary headed father say "Why this unrest?" And while I dodge the question in the main, I beg leave to make a modest suggestion. It is that the farmer himself is greatly to blame. In the first place the average farmer fails to bring genuine good will into his work. He often lacks pride in his vocation and is constantly casting about for some "get rich quick" method of earning a livelihood. He is so half-hearted and unsystematic in his work that his seasons of rest and recreation are very few and in a short time his work seems like drudgery and in truth it is just what it seems, because he has not equipped himself properly for his work.

If he had been educated from his boyhood to look with pride upon his environments—if he knew something of the interesting things in nature which scientific men have spent a lifetime in discovering, his farm, his garden, his yard and everything about him would be a revelation and a joy to him and he would have power to make it so to others, for truly the richest blessings of Heaven lie within the soil and they belong to him who goes after them with diligence, patience, courage. gentleness and a good supply of common sense; but, should be lack any of these requisites, his failure will be more imminent than any other man's, for "steady and persistent must be the hand that guides the plow." So we hold that a successful farmer must be educated for his work.

We make bold to say next that our educational system is not constructed with an eye single to the farmer's interest. In the average rural school we seldom find an outlined course of study, and where such a course does exist we find the youth poring over languages, mathematics and some other formal studies for years and they finally drop out before these are completed to begin the battle of living with no very practical preparation for it.

I do not wish to condemn these formal studies and to have them stricken from the course of study entirely. They certainly are necessary for mental development, but it is not necessary that they occupy such a prominent place in our common school curriculum as they do.

If it is the intention of a youth to gain a livelihood by tilling the soil, the science of agriculture and a thorough study of nature would be of more value to him, and even if it is not his intention to follow such a life, a knowledge of those subjects might make him feel more kindly toward it and, in fact, it might attract him to it. Many a youth leaves the farm because its attractive side has never been presented to him. How present the attractive side do you ask? First make it truly so by believing it has an attractive side yourself and your influence alone will have some weight with him. When you are making out a course of study to be used in your schools, see that the studies of nature and agriculture have a place in the course. Next look for a teacher who is thoroughly in sympathy with your interests, for, methinks, the teacher plays no mean part in forming the likes and dislikes of pupils. You should demand that the teacher who instructs your child prepare himself thoroughly for his work, that he may understand child nature as well as the subject to be taught, and not use the profession as a stepping stone to something better, but when he enters it to do so with the expectation of staying with it and giving all that is noble and true in his life to his work.

The teacher who fails to equip himself thoroughly for the great work of child training, or is unwilling to put an unlimited amount of study, energy and self-sacrifice into his work, has no place in the profession, for the demands upon the teacher are constantly increasing in number and difficulty. Even the work of the home has been shifted over to the school in many cases.

Everything connected with the work of teaching is increasing rapidly—except the salary—and I know some people who would be glad if that were increased also. Many boards of education consider a teacher well paid who receives forty dollars per month for a term of eight months, or three hundred and twenty dollars per year. It is right that you demand specially trained and well equipped teachers for your schools, and I hope you will begin to do so at once; but being somewhat interested in that craft myself, I also hope you may devise some plan by which any self-respecting teacher in these prosperous times may exist on three hundred and twenty dollars a year, let alone harboring any thought of an outlay for special training or self-improvement. We have digressed somewhat from the city problem, yet we believe that the farmer and his schools hold the key to the solution of that problem.

The trust problem, as we find it recorded in our current papers, is so enormous that I cannot even state it, so I shall just read a clipping from a recent journal: "We are a much trusted people. Everything is trusted now. We eat trust food cooked in trust utensils on a trust stove. We wear trust clothes, ride in trust carriages and have trust furniture. When we die we are put in trust coffins, and when we get a cemetery trust we will sleep in trust graves to all eternity."

But the gravest of all problems the new century must face is the rum question. There is no need to state its evil effects, for you know it—not from experience it is to be hoped, but from observation. No more disgraceful, dis-honorable and sinful practice is engaged in in any nation than the sale of intoxicants as we find it in our own great America. Fair Columbia may well hide her face for shame for the example she bears to other nations of less prestige. Its sale is against the law of prudence, humanity and common brotherhood. A man once said to another: "Alcohol, regarded as a beverage, is good for health and strength." The reply was: "Then God made a mistake. He made the whole phenomena of animal life to run by water power. It takes oceans, lakes and rivers to carry it to man, bird and beast, but in all the wide world He never made one spring of alcohol. If it is good for strength, why not feed it to the horse and mule, for they have much pulling to do."

So now the new century demands a strong army of earnest, thoughtful, sober people if these perplexing problems be solved for God's glory and the world's good. It demands an interlacing of communities, counties and states by means of the common bond of sympathy. This sympathy must bound through the veins and hearts of humanity with sufficient strength to unite capital and labor, the high and the low, the rich and the poor, the strong and the weak in one common cause, else the fate of Rome will be repeated in the history of our own republic. It demands not only sympathy among its people, but character as well. It calls for men to fill high offices and positions of trust, who have the welfare of the masses at heart instead of self-interest and self-gain. It calls for men of action who cannot be bought and sold like so much merchandise, but who have the moral courage to stand for patriotism and not for partyism, as has been the fashion during the last century.

When men can be found with sufficient strength of character to demand that these national evils be eradicated by legislating against them—by physical force or by any means whatever—then will the sons and daughters of America enjoy the justice, peace and happiness due to civilization, our American homes will be uplifted, our nation extolled and our God honored.

THE HOME BEAUTIFUL.

BY RENA V. JOHNSON, HIGHLAND, OHIO.

[Read at the Farmers' Institute held at Leesburg, Highland County, December 21 and 22, 1904.]

"All that is lovely and worthy in our lives centers about the little word—home. That in our language means the place where one lives and loves and strives to attain all that is good and desirable; the spot that the soldier fights best to defend, that the workman toils the hardest to maintain and to which he turns at night with the feeling that this one spot with the loved ones sheltered by its roof, is worth all the toil and weariness that must be borne in the heat of the day."

You will agree with me when I say that this love of home and home-building should rule our lives. If so, should we not strive to make home the most beautiful place in the world? Home does not mean a palace—far from it. The lowliest cabin oftimes holds more of love and happiness than the finest of dwellings. To be beautiful means more than mere artistic harmony, although this is not undesirable. God has given us an example unexcelled of His handiwork of beauty in nature. "He who has put the same care and love into the planting of the lily of the hour and the eternal hills," means for us to cultivate this taste for the beautiful and to use it in making our lives more useful to Him. Poetry is not in things, it is in us. It must be impressed on things from without as the sculptor impresses his dream on the marble.

It has been said that only a woman knows how to put into a home that undefinable something whose virtue has made the poet say: "The house-top rejoices and is glad." They say there are no such things as fairies, or that there are fairies no longer, but they know not what they say. The original sung by poets was found and is still among those amiable mortals who knead bread with energy, mend rents with cheerfulness, nurse the sick with smiles, put witchery into a ribbon, genius into a stew, and flowers in the home.

It is generally conceded by men that women are the beautifiers of their homes, and on them depend the little extra touches so dear to the comfort and welfare of their husbands and children, and which turns even the humblest of dwellings into a place of beauty for its occupants. The object of this paper is to find out, if possible, what some of these extra touches are, and if we do not possess them let us try so to do lest our opportunity pass.

Let us first consider the exterior of the home. Let it be all you can afford in the way of beauty in architecture, nothing more. If the house has naturally a beautiful location, your labor in landscape gardening will be greatly lessened. We cannot improve on the mighty oak or the maple. These with well clipped grass give us all we could desire in the way of stately beauty. But if you are not so favored begin by planting trees by all means.

Knowing how few spare moments the farmer's wife has during the summer months, we would suggest care in the location of the flower garden. Have it near your kitchen door or window so you may enjoy the bloom and fragrance whenever you look up from your work. Plant it with the idea of getting all the pleasure you can out of it, and you will not disappoint yourself. Then, too, it will be close to all the waste water, and you can throw the water on the flowers as easily as to throw it on the grass. Your hired men and even the children will soon help you in this, and you will be surprised to find the labor of watering the flowers greatly lessened. Be careful not to plant more flowers than you can care for properly, for a sorry sight indeed are a number of ragged, ill-kept flowers doing all they can to bring forth a few blooms. It is a good plan to have hardy annuals situated the farthest away from the water, for if they are neglected occasionally they will not show it so much.

Care must also be used in selecting the kinds of flowers. Avoid all novelties unless you have plenty of time for both culture and study of the plant. Plants are as different as children, and one must be well acquainted with certain kinds—with the soils required and the insects which infest them—to succeed at all. Better leave their culture to florists, and be content with those of hardier growth and fewer diseases, Nothing, perhaps, gives better satisfaction than geraniums, verbenas, phlox, nasturtiums, coleus, pansies, sweet peas, etc. Nothing is prettier for the garden fence than sweet peas and nasturtiums. With a little care the nasturtiums will form a complete screen full of cherry blossoms. Sweet peas require more attention as they must have plenty of water during the dry weather.

That partly shaded nook is just the place for your pansies. Give them a good, rich soil, plenty of water and partial shade, and their bright, cheery faces will peep out from the dark earth in about six weeks after planting.

What a pleasure these will be to the children. There is something almost human in their dear little faces, and it cannot but create in the little ones a love for them. If the children pluck them so much the better, as the more pulled the more will come. Do not forget the roses. Have as many as you possibly can, and your table will be graced with these loveliest of blossoms during the entire summer. And here let me say, lest I forget it later, do not wait for company to have your table decorated with flowers. It only requires a few minutes to arrange a bouquet and the pleasure and restfulness it will give will amply repay you and make the humblest fare seem almost a banquet.

By all means have some vines to shade your back veranda, to give you a cool resting place while paring vegetables or any other work you can do while sitting.

But you say we have not the time to cultivate flowers. The poultry requires all the time we can spare from our housework. Let me tell you this: Raise fewer chickens in order to have a small flower garden. There is nothing that will bring you nearer nature and nature's God than a flower. They are God's handiwork, and if we examine one carefully we cannot but love and reverence Him who has wrought such beautiful things. It will lessen your labor by resting your mind and lifting it above the commonplace duties of life. We are too progressive. We race along through life without taking time to learn the great lessons and the love shown us in our surroundings. We fail to note the beauty and fragrance of the flowers or the pleasing songs of the birds, all because we see the dollar of man's coining just ahead of us. Do you not think it time, mothers, that we at least should let our minds be open to the beauties of nature and their refining influences in order that we may bring our children to see and love the Hand that fashions these beauties for us? We hear the educational world shouting for school gardens and opportunities for bringing the children into closer touch with nature, then why not co-operate with them and let the children be surrounded with these things at home?

Now we will enter the home. A bright, cheery interior, with good books, blooming plants or graceful ferns, with a dear loving mother full of good ideas and ready to offer advice or sympathy is, indeed, a pleasing picture. Let your home be furnished with care for comfort as well as beauty. Purchase nothing you consider too good to use. Do not pile your couch high with fancy pillows that will cause cold shivers to race up and down your spine if you see the tired husband or son trying to fit one into the tired curve of his body. If they are too good to use do not waste your time making them. Have your living room the cheeriest room of the house; and do not, pray, do not close your parlor to await the minister's coming or some equally important event. Do not make the children feel they have no right to enter there, or if they do enter that they must tread as if on eggs for fear of soiling or breaking something. Such a parlor had better not exist, as even a visitor can have but a chilly, depressed feeling on entering there. Teach the children to use but not abuse, and the farm parlor will soon be a comfortable, pleasant one, with its view of the well kept grounds and blooming flowers, with fields of corn or golden grain in the distance.

The farm is the granary of the world and it should be the most pleasant as well as the most profitable place to be. Make the farm home attractive and keep the boys and girls from growing dissatisfied with farm life. Be a homekeeper as well as a housekeeper. Give to each inmate the same care and attention you give to the house and the result will be fourfold. "It concerns the country that each home be a world; profound, respected, communicating to its members an ineffaceable moral imprint."

We hear the busy mother say she has not the time to read and keep informed on the events of the day. This is especially true of the farmer's wife with her numerous cares. Here again we say take time. It will pay and pay well. We are the mothers of the future rulers, and it is our duty to see that we give our country the very best. It is a duty we owe ourselves as well. Better clothe your children in plain dresses and give them simple cookery than to starve your mind or make yourself so dull that they will be ashamed of you. A bright intellect with a few hours reading, or a few minutes if you can not spare more, will do wonders in helping you to help your children. Have a few good magazines as well as your farm journals, and create in your children a taste for good literature. You cannot keep them from reading something, so give them the best and you give to the world better men and women. Let them find in mother a constant helper. Do not let your good housekeeping crowd out your good homekeeping. Make husband and children proud of mother's intellect as they are proud of her cooking or embroidery.

"Life is as we make it. This earth is a veritable paradise far better than we can know or think. Have you the key which will unlock and disclose its marvelous beauties?"

What with our flowers in the yard in summer, a few choice ones to brighten the long winter days and make us long for springtime and birds, our books and magazines to be enjoyed and discussed, our home will be a home indeed, with mother as the director to Him who has prepared for us an eternal abiding place.

RURAL FREE DELIVERY.

BY F. S. LATHAM, PLAIN CITY, OHIO.

[Read at the Farmers' Institute held at Plain City, Madison County, February 22 and 23, 1905.]

There has been nothing in the history of the postal service of the United States so remarkable as the growth of the rural free delivery system. Within the past few years, largely by the aid of the people themselves, who, in appreciation of the helping hand which the government extended to them, have met these advances half way, it has implanted itself so firmly upon postal administration that it can no longer be considered in the light of an experiment, but has to be dealt with as an established agency of progress, awaiting only the action of Congress to determine how rapidly it shall be developed.

The facts hereinafter set forth with some elaboration of detail which the importance of the subject seems to me to warrant, will demonstrate:

First—That the free delivery of mails in rural communities can be widely extended with great benefit to the people, and with little cost to the government.

Second—That whenever the system has been judiciously inaugurated, with a sincere purpose to make it a success, it has been followed by these beneficial results: Increased postal receipts, more letters written and received, more newspapers and magazines subscribed for. So marked is this advancement that quite a number of rural routes already pay for themselves by the business they bring.

Rural carriers are required to report at the postoffice at an early hour when their mail is routed. Each family's mail is separated after which the mail is bundled, or packed in route cases, and is ready for the route. The mail is generally so arranged that on reaching the first patron's box, his mail comes first, and so on until the last patron's box is reached when his mail is last in the case. Each carrier is required to keep a strict account of all stamps, stamped envelopes, paper wrappers and postal cards sold on his route, and the amount of cancellations. He must keep a strict account of every piece of mail delivered, keeping separate postal cards, letters, circulars, newspapers and packages. He must also keep an account of all pieces collected in the same manner. At the end of each month a total account is made of each route and the result is forwarded to the Postmaster General at Washington.

Rural carriers are required to carry five dollars worth of stamps, stamped envelopes, etc., so as to be ready at all times to supply patrons. Patrons can buy money orders and registered letters of their carriers. Patrons should buy all their supplies of their respective carriers, which will help to give their route a better business showing.

While on duty a carrier should be kind and courteous to every person, and accommodating in so far as the postal laws will allow. And right here I would like to enumerate a few of the little things a carrier has to contend with. One day last spring I saw a man running from the field near by, frantically waving his hand for me to stop. While waiting for him I noticed a corn plow standing close by and when he came up he said: "I would like to have you hitch this plow on behind and take it down to my neighbor's, a mile and a half distant." He remarked that he was in such a hurry with his work that he did not have time to go himself. I said to him: "Why, my dear man, I am very busy now myself, but if you will just wait till I finish my trip, I will gladly do it for you." He is waiting yet so far as I know.

Another and more common occurrence is: "I want to send to Blank and Blank for this or that, and our folks did not have time to fill out the blank before going to work, so we thought you knew all about how to do it, and that you have plenty of time." In such a case the carrier has to keep sweet and say: "Why, yes, certainly, I have all the time there is," and by the time he gets through he has lost fifteen or twenty minutes. It occurs almost every day that some patron will ask for a postal card and expects the carrier to wait until he writes it. Now, can you not see how ridiculously wrong this is? A carrier gives a bond of one thousand five hundred dollars for the faithful performance of his duties, and every time a patron engages him in conversation and holds him for these little accommodations, he is violating some of the postal laws, "just to be accommodating." Patrons, do not ask it; you have no right to do so. Provide yourself with a good supply of stamped stationery, you cannot afford to buy it any other way. You say you cannot afford to buy it in quantities. Do you know you are losing twenty-five per cent. on your money by buying one envelope at a time? You get one stamped envelope for three cents, or you can buy twenty-five for fifty-three cents; then when you are ready to write, you can put your letters in the box and go about your work, and in that way there is another saving by not having to wait for the mail wagon.

The greatest nuisance connected with the service is the two pennies in the box with the letter. I am glad to know, however, that this has been forbidden and you no longer have any right to place loose pennies in a box with a letter. Did you ever stop to think how inconvenient this is to a carrier? We will say, suppose it is raining hard, and a carrier sees a target up; he is compelled by law to stop and see what is wanted. He finds a letter in the bottom of the box with two pennies near by, and in order to see these pennies he must get out of his wagon to get them, and in so doing will be soaking wet from a dashing rain, sleet or snow. Buy stamps and put your letters in the rack made for that purpose, and save your carrier from exposure and cold, remembering he has twenty-five miles to ride each day, and when he once gets cold he is never warm until he reaches home and the fire. Most of these inconveniences which are caused by the patron should be remedied at once.

That you may know the remarkable growth of the Rural Free Delivery, I will take for example Route No. 4, Plain City, Ohio. On the first day of August, 1901, I began the duties of mail carrier. The first month I delivered and collected one thousand one hundred and eleven pieces. During the month of January, 1905, I delivered and collected five thousand three hundred pieces, a growth of four thousand two hundred pieces in three years and six months. The first two years I scarcely ever wrote a money order or registered a letter. Today it is different. Scarcely a day passes that I do not write from one to three orders. This remarkable increase has come steadily along until now it is almost at a standstill. It is only fair to presume that this is an average growth of the system all over the United States.

The question of carrying passengers has been discussed. Some western carrier asked this question: "Should I see an old lady along the road with a sprained ankle and utterly unable to go any further, what should I do?" The Postmaster General said: "You have no right to carry any passenger, but you should take the old lady in to ride." Another question was asked: "Should I overtake a young lady who is tired from walking and she should ask to ride, what should I do?" The answer was: "Tell her to sprain her ankle and get in and ride."

For his services each carrier receives sixty dollars for each calendar month. We can hear almost every day "You have a snap of a job." Do you think so? Let us see. During the whole year 1904 two thousand five hundred discouraged rural carriers gave up the unequal struggle in despair and left the service; nearly one thousand since September 1, when the increase in salary had already taken effect. In no other branch of the government service save only in the army and navy, is there anything to approach these figures. Out of one thousand seven hundred city carriers in Chicago in 1903, just one solitary carrier resigned and he did so to engage in fruit farming on the savings of a few years. At the present salary the average rural carrier could not save enough in five years to pay for a cemetery lot in which to lay his weary bones.

While millions are being spent lavishly on all sorts of needless and many useless things, the rural carrier is told to wait until the postoffice department is making money. The carriers' horses and wagons are wearing out, horses dying; accidents while on duty throw him on a bed of suffering with no money for medical attendance, while the substitute does the work and draws the pay. How can these men support their families properly? How can they educate their children?

You should have your box placed conveniently for your carrier, so that he will not be required to stop his horse to deposit mail. The box should be attached to a firm post, forty-six inches from the ground to the bottom of the box, in order to allow a forty-four inch wheel to easily pass under it. During an icy time it is almost impossible to drive near enough to a box to deposit the mail without the wagons slipping under the box, and it is almost certain to tear the box loose from its fastenings.

I would not have you think the carrier is faultless and without mistakes. Each carrier has about eight hundred names to keep separate and remember, and several families with the same name have children named for each other. Is it any wonder he should make a mistake, even often? Each route has its faultfinders, and if a mistake occurs ninety-nine times out of a hundred it happens with the faultfinders. Carriers do all they can to avoid mistakes, but they are bound to creep in. Similarity of names is a nuisance for them. Encourage your carrier to be more careful by first doing all you can for his convenience and comfort.

The happiest, greatest and mightiest states and nations are those that have the most universal system of schools and education for all their people. The most enlightened governments of the earth recognize this fact and have taken great precautions to establish and maintain good common school systems for all the people.

In the United States every state has her own school system established, and millions of dollars are annually appropriated from the tax payers to maintain these schools. These schools are not only here or there, in this or that favorite community, but they are everywhere, in recognition of the fact that all must be educated, trained and enlightened if the community, state and nation would be prosperous and strong. These schools have been considered so important that in many states compulsory educational laws have been enacted, thus compelling the careless and indifferent to embrace the opportunities held out to them by the state, and it is a well known fact that those states that have the most stringent laws and enforce them, have the most refined, orderly and systematic citizens and social conditions.

These institutions are only in activity from six to nine months in the year and are only for those below the age of twenty-one years.

In Germany, where they have the best schools in the world, they have the schools in session eleven months of the year, and they have accomplished such good results that the same spirit has drifted to our country. As a result Massachusetts has eleven months school each year, New York ten, Pennsylvania and Michigan ten each and other states are following the plan of lengthening the school year for their young people. These arrangements did not come by chance nor are they untried, but on the other hand they are based upon centuries of thought and experience, and have been determined as the best arrangement for the state and her people. In establishing the free mail system the government did no more than to extend the already established system of education. While the state maintains the little red brick school house on every hill top, for those under the age of twenty-one years, the federal government extends the instruction to those of all ages by maintaining the free mail system. So we notice the government's university swings open its doors for all and none ever graduate.

Our forefathers who first landed on Plymouth Rock, of all things, next to religion, prized education. In case they were correct, we surely now have at our door the facilities by which we can improve ourselves in all things that are good and profitable.

There yet remains one point that may be within the province of this paper, and that is the selection of our reading matter for the year. We often hear it said: "We doubt the propriety of subscribing for a daily paper," or "We hardly know what to select for our young people," etc. The problem of selecting the best and most appropriate reading matter for the year is by no means easy to solve. There are such vast accumulations of material, much of which is worthless, that very many people are often at a loss in making their selection. I sometimes think, in order to be methodical, it would be well for each township to select a committee of three or five of its best qualified citizens to canvass the various dailies, weeklies, magazines and young people's publications and let this committee recommend and publish the result of its deliberations. The committees of any number of townships could meet in joint session and thus enlarge the scope of thought and strengthen the report. A system like this would tend to make the reading uniform and systematic, and would, in my opinion, result in the greatest good to the community.

The Rural Free Delivery System was instituted January 1, 1899, with six carriers from West Chester, Pennsylvania.

No postoffices or star routes were discontinued. Two fourth-class postoffices have ceased to exist in consequence of their patrons being supplied by rural delivery. The cost of the service for the first nine months of its existence was one thousand eight hundred dollars. A fair estimate of the value of the postage on matter collected is two cents per piece, amounting on the one hundred and nineteen thousand six hundred and sixty-eight pieces collected to two thousand three hundred and ninety-three dollars and thirty-six cents, thus not only paying for the service but leaving a balance of five hundred and ninety-three dollars and thirty-six cents after affording the people a much appreciated free delivery and collection service which they had not heretofore possessed.

If it had not been for the rural collection service practically all the above sum would have been absorbed by fourth-class postmasters, and the people would have been compelled to send to some office for the one hundred and fifty-five thousand eight hundred and five pieces of mail delivered without charge almost at their doors. As an experiment the first appropriation was ten thousand dollars.

There are now thirty thousand carriers in the United States and new carriers are being appointed at the rate of five hundred a month.

The appropriation this year is fifteen million dollars.

THE OHIO DEPARTMENT OF HIGHWAYS.

BY HON. SAM HUSTON, STATE HIGHWAY COMMISSIONER, COLUMBUS, OHIO.

[Address in part before the Independent Farmers' Institute held at Carroll, Fairfield County, February 18, 1905.]

It is certainly a pleasure for me to be with you this afternoon and listen to the excellent paper by Dr. Nau on good roads, for I for the last thirty years have been studying and discussing the matter of the construction and use of public roads as well as directing the construction of them. We only organized, or rather started to organize, our department a few days ago and I have the pleasure to make this my first address as Highway Commissioner to the Farmers' Institute here this afternoon.

It is always a question in my mind when I address a strange audience as to what will, more than anything else, interest and instruct in the matter of good roads. The acts, there are two, establishing the new department of highways, do not as I should desire, bring out the specific difference of the two objects of the movement. One of the objects in mind is the matter of state aid and the other the matter of state supervision, and I shall consider the latter object first.

Fifteen years ago there was not a single state in the whole United States that had enacted a law or laws establishing a State Highway Department. In 1891 New Jersey, sometimes called the Mosquito state, took up the question and passed such an act. The next to take up this important question was the state of Massachusetts, followed by Connecticut, New York, California and others. In nearly every case the departments started on a small scale and have grown until they have warranted increased appropriations. Only one state has started full fledged and that is Pennsylvania, which created its State

Highway Department in 1903, appropriating six million five hundred thousand dollars to be expended in six years, nine thousand dollars per year of which is devoted to salaries and traveling expenses.

Last April the legislature of our state passed a law establishing our Highway Department, and I will attempt to show you briefly what this department intends to do. The first requirement is that the man in charge be a civil engineer, and not only a civil engineer but a man who has had practical experience in the construction of public roads.

I have in mind one case where a set of road commissioners decided that they wanted to build a road exactly as another one thirty miles away had been built. They examined the materials of which it was constructed, in the quarry and on the road, studied the specifications under which the work had been done, and attempted to build their two miles of road along the same plans and in their judgment of nearly the same materials as that of the road examined. It turned out, however, that the limestone used, although to the untrained eye of the same character as had been used in the road examined, was not a good road material, and, when exposed to atmospheric conditions and travel, failed, and the road, although the travel was light, soon required a large amount of repair at large expense. A board of county commissioners or turnpike commissioners do not have the facilities nor the means at their command to determine as to quality of materials in regard to durability. One of the first ideas of a State Highway Department is to investigate as to the available road materials of the state and their desirability and value.

Our Ohio law provides that the Department of Highways shall have the assistance of the apparatus and supplies of the College of Agriculture and the College of Engineering of the Ohio State University, with the consent of the president, to make tests of the materials proposed to be used in constructing public roads.

I am no critic as to the ordinary method of road building, but you have seen examples of inefficient methods. I have seen a supervisor carry dirt from one spot.to another, and the next year the next supervisor carry it back to nearly its original position. I wish to say right here that the Department of Highways does not propose to take the place of a single county or township officer, but intends simply to act as advisor and render any aid possible in furthering and encouraging the construction of good roads. The laws further provide that the Department of Highways shall prepare, publish and distribute bulletins and reports on the subject of road improvement, evidently intending that the Highway Commissioner shall by public addresses and other methods carry out the intention, that the Department shall disseminate information as well as investigate questions that come up as to road improvement.

The other object of the acts is that of state aid. That is, all appropriations by the legislature or by the National Congress shall be expended under the direction of the State Highway Commissioner. The acts provide that this Department shall have charge of all roads constructed under any appropriation that shall be made by the state, and provides that fifty-one per cent. of the owners along a certain road desiring an improvement of the road, may petition the county commissioners and if the commissioners deem it advisable to make the improvement, they to petition the state through the State Highway Commissioner to expend twenty-five per cent. of the cost from the state treasury. The county commissioners may initiate the improvement by resolution and petition directly to the state department.

We are now working on a bulletin which will give full information as to the proposed work of the Department in reference to supervision, and also state aid. This bulletin will be ready for distribution shortly, and will contain forms of papers needed to present properly to the Department applications for state aid.

The Department desires in the most conservative way and in the most economical manner to encourage in every possible way the construction of good roads throughout the state. One of the great problems of the present day is the flow of population from the free country to the congested cities. Telephones and free rural delivery are tending to make farm life more attractive and pleasant. If to these advantages be added good roads from home to home, home to school, home to church and home to market, city and railroad, for three hundred and sixty-five days in the year, the question of the movement from country to city will be solved.

SCHOOLS AND TEACHERS.

BY MISS MAUDE BAKER, WALDO, OHIO.

[Read at the Farmers' Institute held at Waldo, Marion County, January 16 and 17, 1905.]

The Harrison school code, passed and approved April 25, 1904, is an act to provide for the organization of the common schools of the state of Ohio, and to amend, repeal and supplement certain sections of the Revised Statutes and laws of Ohio. This law is for the advancement of the profession of teaching, and it will cause a more thorough preparation on the part of the teacher and lead all to see that the schools of Ohio are on the move. It may bring about the more careful grading and supervision of the township schools. I would suggest that it would be the greatest blessing if our rural schools were all centralized. There is too much to be done in the rural school for one to do well—too many grades. One cannot divide the very short period of the school day into so many lines and accomplish what ought to be and is accomplished in the graded school. Section 3922 of the new school code says: "The board of education of any township school district is authorized to suspend the schools in any or all sub-districts in the township district, but upon such suspension the board must provide for the conveyance of the pupils in such sub-districts to a public school in the same township district, or to a public school in another district, the cost of such conveyance to be paid out of the funds of the township school district."

When transportation of pupils is provided for the conveyance must pass within at least the distance of half a mile from the respective residences of all pupils, except when such residences are situated more than half a mile from the public road. But boards of education are not required to provide transportation for pupils living less than one-half mile from the school building. When the schools of a township have been centralized, such centralizations are not to be discontinued within three years thereafter, and then only by petition and election as required, and if at such election more votes are cast against centralization than for it, the division into sub-districts as they existed prior to centralization are to be re-established at the next regular election, and sub-district directors elected. Under centralization a better opportunity is afforded for the teacher to stimulate the pupils to do better work. The bringing of pupils together from all parts of the township into one school naturally brings about emulation which is a great incentive. Centralization means better school rooms, better apparatus, better heating and ventilation, better teachers, and therefore better schools. It permits a better grading of the schools and classification of pupils. It affords the broader companionship and culture that comes from association. The annual cost of the schools of the United States is about two hundred million dollars. About two-thirds of this is raised by local tax, about one-fifth by state tax and the remainder is derived chiefly from permanent funds. There are over four hundred thousand teachers in the United States, of whom about one-third are men and two-thirds women. Only about ten per cent. of these have had a professional training. The average term of service is five years and about eighty thousand new teachers are needed every year.

The principal institutions for training teachers are the normal school, the city training school, the pedagogical departments of universities and teachers' training classes. To these may be added the teachers' institute, the summer schools, which, however, while they stimulate and instruct the teachers, can hardly be said to give them a professional training.

At present there is no need of discouragement. Everywhere brave men and women are beginning to prepare themselves in earnest for the high calling of teacher, hopeful that the future will bring them the recognition they deserve.

With free schools, able teachers consecrated to their calling, and better courses of instruction, with co-operation of parents and teachers, with the many educational periodicals, the pedagogical books, the friends of education in America may labor on, assured that the future will give abundant fruitage to the work which has so marvelously prospered in the past.

Teaching is an art; the true teacher is an artist; the schoolroom is the studio; the children are the material; the human soul is the finished picture. How delicate and sensitive the material, and how rare the artistic skill of her who can paint upon the canvas all the loveliness of the human soul. The material is at hand, but it requires the artistic touch of the teacher to awaken interest and to arouse enthusiasm in her pupils. It is not what we drill into the pupils, but what we drill them into.

Education is a complex process, is a life-long task beginning at birth and continuing until death. It includes the development of the body, the intellect and the soul. It fits individuals for higher living. The home, the school and the church are educational agencies and each contributes something to the complex result called education.

Dr. Fitch, of England, said: "Men are educated from infancy to the grave by the character and behavior of their friends, the nature of their environment and the books that they read. The Athenians believed that the truest beauty was to be reached only by the development of the mind. Life is a struggle, and when it is wisely used it is the faithful struggle of an earnest human soul toward what is right and best.

The first question in the art of teaching is the end to be attained. The more clearly the end to be attained is seen, the greater the inspiring interest and the higher the skill. There can be no skill in any art in the absence of definite aims; this is true in the simplest arts, even in pitching a ball, and it it eminently true in the art of teaching, which is the art of arts. But what is the end to be attained? It is the development of all the powers of the pupils, physical, mental, moral and spiritual.

Froebel's marvelous insight into child nature was made possible by the memories of his own childhood.

Pestalozzi was the first teacher to announce that all people should be educated, that in fact education is the one good gift to give to all, whether rich or poor. His greatest pedagogical principle is that education consists in the harmonious development of all the human powers. He loved little children; he loved the distressed and lowly; he loved his fellowmen, and in this he more closely resembles the Great Teacher than any other man that has ever lived. He insists that the mother is the natural educator of the child in its early years. It follows, therefore, that the mother should be educated. By his methods he proved that every child is capable of doing something if the teacher is able to draw forth and awaken the powers of the mind in the order of their development.

The great question is, how shall we teach? The teacher's preparation must determine not only the facts taught, but also the order of their presentation, and also the methods to be used in teaching the several facts. "The ability to pick thought out of its verbal husk," as Dr. Woolsey, of Yale, once defined reading power, is trained by "husking thought." The aim of book study is to husk the author's thought. The co-operation of pupils in class work is an excellent preparation for real life. It begets the feeling of social co-operation, awakening a desire to do what others are doing and an ambition to do well whatever is attempted. The pupil learns to measure himself by others; he is in the position of a learner and he is on the alert to know; he is unconsciously full of deep wonderment, and the teacher must possess reserve power. In no other branch of school training is a clear knowledge of the end to be attained more important than in the teaching of reading. Reading is not a simple art with a single end, but it is a complex art including several simple arts with different ends. Reading is the most important branch taught, because it is the foundation of all other studies. And, sad to say, it is very often the most poorly taught. The old method of teaching the pupil, first, the letters of the alphabet in order, and then the combination of the letters ab, an, etc., we are happy to say, is not used by the modern teacher, and the progressive teacher is aware of the fact that nothing can take the place of the blackboard in the first lessons.

The lessons of the chart and primer supplement the blackboard work. Script, first. We may be asked what method we use in teaching reading. It is not enough to say that we use the word method or the sentence method, but let us say we combine the four methods:

First—Drill on consonants, which is the phonic method.

Second—Drill on stock words, which is the word method.

Third—Drill on blend words, which is the synthetic method.

Fourth—Drill on thought reading and reading for expression, which is the sentence method.

It is easy to go from script to print—there is such a close relationship between them when taken in order. It is wonderful to note what the little ones can do in their work—they learn to read and to write at once. All primary ideas in every branch of knowledge must be presented objectively, and how we can teach literature right in the beginning. Partly by little prayers, and songs and memory gems. The story also has a prominent place in the modern primary school. It has a special value as a means of training the power of expression. It is not enough that stories are read or told to children; they must be told by them. The great question is: What is best for the pupils? For the schools are for the pupils and not the pupils for the schools.

School life should be an inspiration and a delight. Let childhood be free from sorrows. Teaching demands seriousness of purpose and a desire to bring to the work the fullest preparation possible. The name teacher should be a synonym for charity and sweet reasonableness. And he who leads the child to grasp the idea of a true education and is the means both by precept and example in helping him to obtain it, not by memorizing but by living it, is the true teacher.

When Christ taught the people He used material that they could comprehend. When He spoke His parable of the sower while He sat by the seaside, the multitude had gathered from the villages and the farms of the country around and they could thoroughly appreciate the lesson. His parable of the vineyards was doubtless suggested by the vineclad hills of Judea, and the lessons taught were made forceful by their suitableness. In His conversation with the learned Nicodemus He plunged at once into the most profound thought and doctrines, but when He talked with the ignorant Samaritan woman His approach to the truth He would teach was most simple and gradual. No one ever failed to understand Him and he is the most remarkable example of a teacher, suiting Himself to the capacity of His learners. When He wished to teach the evil of covetousness He told of the rich man and his barns. He encouraged faithfulness by the parable of the talents. He taught mercy by the account of the good Samaritan. Joy over repentance was illustrated by the story of the ninety and nine. His teaching was full of illustrations; it was simple yet logical; it drew from nature. It elevated the truth and sought to enforce it. He allowed no thought of personal safety to overshadow the truth; He was earnest and full of sympathy. His sympathy went out to the people as sheep having no shepherd. One of the grandest lessons that the Great Teacher left for the teachers of all time is that He came close to the lives and hearts of them that He instructed.

SOME NEEDS OF THE RURAL SCHOOLS.

BY MISS SUSAN J. SWEISEL, OLMSTED FALLS, OHIO.

[Read at the Farmers' Institute held at Olmsted Falls, Cuyahoga County, February 13 and 14, 1905.]

In speaking of the rural schools let us keep in mind what is meant by schooling. Ask the average man what that brick building is for and he will probably answer: "The place where our children go to school." "Why do they go to school?" "To get ready for high school." Does he stop to think that in that getting ready process his children are spending the most critical years of their lives, years when they are most easily influenced for good or evil?

The children themselves do not know, but we should, that education is a preparation for life. Its purpose is to develop to the fullest extent the capacities with which the Creator has endowed them. We are told and earnestly believe that the greatest glory of our national life is our system of district schools. Less than half the children attending the rural schools attend any other. The great majority go out to fight the battles of life equipped with the knowledge gleaned in the district school.

In life's preparation the rural school ranks first. We get nearer to nature in the country. We have not the elegantly appointed buildings or many conveniences of the cities, but there are no other such boys and girls as those of the country, and we have them. Think of the many great men who laid the foundations of their successful lives in the district schools. When we think then how much the rural school, which is developing the mental and moral faculties of our Young America, means to the boys and girls, shall we not make an earnest attempt to make it a place where they will receive all the good possible, where they will be so imbued with a love for knowledge that they will desire more than can be gained there?

Let us turn to the average district school buildings and surroundings. The first requisite for a good rural school is a roomy school yard, not a hard, barren piece of ground, while our cattle roam over green fields and cool running brooks, but a pleasant place with plenty of grass and shade trees and a good well. It is shocking to think with all the pure water that has been provided for our use how many schools are without wells. Many schools are compelled to go to some neighboring well for water. This is trespassing on another's property. Of course any one will permit it unless he be very hard hearted, for who could allow these little ones to suffer for a drink of cool water when he can provide it?

The yard should be neatly fenced. What respect can our boys and girls have for themselves or their play ground with two-thirds of the fence down and the buildings in poor condition? Can we teach the pupils of the rural schools neatness and the right use of property if we let the buildings and fences get in a tumble-down condition and allow them to remain so for two or three years? Example is stronger than precept.

What architect first drew plans for a school house? Was it for convenience sake, for the sake of the almighty dollar or through mere indifference that he gave us these boxes with a roof and underpinning? Let us have our rural buildings constructed with an eye for the beautiful.

The school room and equipment of the average rural school can be very much improved. The district school boards should provide something beautiful and ornamental as well as useful in the way of furnishing the school room. Every room, in addition to the necessary furniture, should have some decoration. Pictures furnish the best decoration for a school—copies of the masterpieces of great artists from which so much can be learned. Children will learn more from a few good pictures than from many cheap prints which they will simply classify as pictures and will not think of finding any meaning in them.

The sanitary conditions of the rural schools are exceedingly bad. This is where the city schools are ahead of the country. They do not hesitate to pay a big janitor bill in order to keep the school building clean. In the city the rooms are swept and dusted well every day, and the floors are mopped once a week. Let us contrast this with the country, where there are no clean sidewalks and where the children bring in so much mud on their shoes. The rooms are swept, or are supposed to be swept, every day. They are mopped once a year; the windows and woodwork which so many little hands are touching every day are cleaned once a year. Shall we let the dirty smoke-begrimed city have cleaner school buildings and better sanitary conditions than the country with all its fresh air, sunlight and soap and water? Every school room ought to be mopped once in two weeks at the very least.

It is a blessing to those confined in the school room that spring brings warm weather. Near the close of the term were it not for the warmth allowing us to have the windows wide open we would be almost unable to see the green grass and trees and the many signs of new life springing up about us.

The reason for so much of the uncleanliness of the rural schools is insufficient pay of the janitors, their pay being about two dollars and fifty cents a month. What person would care to do all the work necessary to keep the school as clean as our homes, and I am sure they should be kept so, for two dollars and fifty cents a month? Not one. It is therefore the duty of our boards to provide efficient janitors and pay suitable wages. We preach cleanliness and are particular about it in our homes where the busy housewife is scrubbing and cleaning almost continuously, that everything may be bright and clean and conducive to good health, but at the same time we send our children to school where they are compelled to sit and study a great part of the day amid dust and cobwebs that would not be tolerated in the home. Pure surroundings are necessary to the development of pure minds, and such we are endeavoring to bestow upon these boys and girls of the rural schools who will one day be the leaders of our great national life or the home makers of this glorious country of ours. Give them every means of developing high moral standards which will enable them to live pure and noble lives. Let us remember that "cleanliness is next to godliness."

Every school ought to have a good dictionary and a good encyclopedia. In addition to these there should be a library of books suitable for children which they can read and which may instill into their young lives a love for good reading and a hope that they may some day have a library all their own. Dawson tells us that a man who is fond of books is usually a man of lofty thought and of elevated opinions. In rural districts for every school to own a library is a difficult matter, as books are expensive and every little school could ill afford a library. It would be a very good plan if all the district schools of a township would club together and own a good library at some central point from which the several teachers could get books for their schools. Milton says: "A good book is the precious life-blood of a master spirit; embalmed and treasured upon purpose to a life beyond."

In an address at the opening of a village public library, Hon. John Morley, the eminent English statesman, said he was not so foolish as to claim that books were the only education. Work was an education, politics was an education and the divinest of all arts, music, was an element and an agency in education. But after all without free access to books and without some knowledge of how to handle and use books, education must be a narrow and mutilated and imperfect process.

One of the greatest needs of our rural schools is better supervision. Every township should have a superintendent whose duty it should be to superintend the district schools, plan the work to be done during the year, visit the schools and see that the work is being properly carried on and advise the board concerning any thing which he thinks would benefit the schools. All of the schools in the township would then be doing the same work and we would have a better system in the rural districts.

CO-OPERATION.

BY M. C. BERKHOLDER, NAVARRE, OHIO.

[Read at the Farmers' Institute held at Justus, Stark County, December 7 and 8, 1904.]

It is said that every person's feelings have a front door and a side door by which they may be entered, but unfortunately, up to the present time, it does not appear that any successful co-operative methods have entered at either door of the farmer's feelings. Now, almost all of us have, within the last five years, experienced the effects of such methods which are being largely used in the industrial world today. Generally speaking all considerate farmers feel the necessity of such action, yet they seem to be unable to make much progress, probably on account of the inutility of some previous visionary projects that have long since come to grief.

It is but reasonable to suppose that some such circumstances have had considerable influence in deterring further effort. We never seem to realize the amount of persistent effort brought forward in the ordinary course of our farm operations; because our wheat fails this season we never think for a moment of discontinuing its culture. Any number of failures are followed by just that same number of attempts, but it is far different with farm organizations. One failure raises a barrier for a decade. In the face of these facts do we ever stop to inquire into the causes that have brought about these failures, and that have created so much apathy in organizations yet intact?

Let us here undertake to inquire into these causes. In the beginning nearly every defunct co-operative effort invaded the realms of the merchant. It proposed to do business without him; it did more, it proposed to annihilate him. It assumed the privilege of making prices on articles he did not possess. It endeavored to transact not only its own business but also that of its opponents. It never considered for a moment that the business man was powerless to make any material concessions in the brunt of sharp competition, and the control exercised over him by his superior tradesmen. In some sections the wily politician succeeded in appropriating it to selfishly base account.

In the midst of these difficulties and blunders it does seem that we ought to be able to catch the first clear glimpse of the principles of co-operation. The fact is the farmer has not as yet given the requisite attention to commercial interests and the buyer sets the price on the products of the farm, which is not permitted in any other business. Manufacturers and others have long since discovered that united action was a necessity. They have yielded to this necessity and are prosperous. The farmer has not conformed to the requirements of the times and suffers. Why is it that others are in advance of the farmer in this? Their case was more urgent and safety in organization was more promptly sought. The farmers being more strongly entrenched could hold on to the old methods longer than others, hence the farmer is the last to organize; but that does not prove that he will be the least.

With the achievements of workingmen in this country and Europe, farmers may hope for every needed good if they will only use the same means the workingmen and manufacturers have used—co-operation. In our judgment the most feasible plan to accomplish this end would be to let the various farm organizations add another department to their present curriculum and name it commercial development. Teach controlled marketing. Teach the farmer that he has as good a right to a profit as other people. Teach him that while he owns the stuff no one can put a price on it but himself. Teach him that if the farmers will combine in the proportion of one out of seven they will be their own price maker on their own products. Tell him there is a revolution in the agricultural thought of the country and that the agricultural press of the country must change front, as must also the agricultural schools and colleges if they want to meet the requirements. "Raise more and cheaper crops" will no longer be accepted as the slogan of agricultural education, and something that will bring the farmer more nearly abreast with twentieth century conditions must be substituted for it.

Papers that are to meet a welcome in the farmer's home must teach better marketing as well as better production, must show farmers how to get remunerative prices rather than how to secure increased yields, and the schools that shall satisfy rural aspirations must teach how to dispose of crops at a profit as well as how to grow them. Farmers should no longer plow and plant and harvest in blindness, nor longer follow those who lead them as they have been led so long, into the snares of the despoiler.

About the only great problem the farmer has successfully solved is that of square root. He rises early, tugs and toils, frets and fumes in order to maintain a position that will permit him to earn less than three per cent. on his investment, while the more sagacious tradesman, by controlled marketing, receives net earnings anywhere from twenty-one per cent. to fifty per cent. The methods adopted for other great purposes, and the successes achieved, point to new national conventions—a convention of wheat growers, of corn raisers, of cotton planters, of tobacco raisers, of fruit growers, of live stock men—of every great agricultural interest; assembled thus we might pattern after the political conventions and act through committees. Not only supply, demand, market and price may be considered, but other questions affecting the industry may be discussed, making the convention an annual summing up of the lessons and experiences of the year, and of suggested advancements for the year to come. Who can calculate the benefits that would result from such conventions, and who would be better qualified to make equitable prices upon the various products than the members of such a convention acting primarily through a committee of the most intelligent, most conservative and most judicious of them all? Such action ratified by the convention would go to the country with a force and be received with a confidence that no other action could claim, unless it were the action of the government itself.

We repeat that without well organized forces to resist the encroachments of other organized classes the farmer will lose his independence and slip into a dependency, little better than serfdom. Hence every farmer should ally himself with one of the great farm organizations now in the field.

It is the only way open whereby to restore to equilibrium the inequitable features of present oppressive conditions. Let every farmer do his part in the great work before the farm organizations of the country. It is a duty he owes to himself, his family, his neighbors and his country. To shirk a duty is cowardice. Let every farmer enlist and let him choose under what banner of organization he will march.

May the farm organizations prosper until equilibrium is restored, and the farmer has assumed that place at the head of the industrial world for which he was designed by the Creator. The farmer should control the industrial world and give new economic conditions at once just and equitable. Through the power of well directed farm organizations he will yet prevail.

BENEFITS FROM FARMERS' INSTITUTES.

BY D. S. SNIDER, NEW GUILFORD, OHIO.

[Read at the Farmers' Institute held at New Guilford, Coshcoton County, December 9 and 10, 1904.]

What we have to say on the subject of benefits from farmers' institutes we say from convictions based on our observation, study and experience and offer merely as suggestions with a hope that they may do some good.

Whatever benefits are to be derived from farmers' institutes must depend upon the willingness and capacity to learn of those who attend them. If there is a spirit of predetermination to find fault with the exercises as a whole, or prejudice, or a self-sufficiency that disqualifies one from profiting by the experience and suggestions of others, no matter how excellent the exercises may be, the benefits will be few. Healthy criticism is desirable and necessary. Without that close attention and desire for facts that calls in question looseness of statement and exaggeration, institutes would soon fall into disrepute. Close attention and honest criticism we should regard as the highest compliments that could be paid to the exercises, and no higher appreciation could be shown than an honest and intelligent effort to profit by the suggestions for our benefit.

There are many benefits to be derived from attendance on and participation in the exercises of farmers' institutes. Their design is simply to get the people of a community together to have a good social time, to exchange views on the various problems which the farmer and every one else in the community are called upon daily to solve and the object in view is to improve the community morally, intellectually and financially. It is desirable that all the interests of the community be represented and discussed as its prosperity depends upon a due appreciation of all the interests. Hogs, corn and clover merit due shares of consideration, but institutes can not be successfully conducted when they constitute the whole range of discussion. To make the exercises interesting and command close attention upon which the benefits designed depend, the mechanic, the poultry keeper, the dairyman, the housekeeper, the local merchant, the school teacher, the professions and the boys and girls as well as the stock grower and agriculturist should be represented.

The leading speakers of the institute, the state speakers, the skilled, experienced and practical men sent by the state to aid in the improvement of farming communities cannot reasonably be expected to do the whole work, nor is it possible to reap the whole benefit designed for the community by depending upon them entirely. While no doubt they are assigned their work with a view of accomplishing the most good, and they on their part do all they can to benefit the community, it still depends upon the community itself, to a great extent, whether or not it benefits by the institute. The element of interest must be present and present to such a degree as to insure a fairly full discussion of every subject up for consideration. The institute does not accomplish its desired ends unless each subject in turn is fully discussed. We all want to know what is best to do and how to do it. Every one must rely more or less upon his own judgment and knowledge of his own particular circumstances, but he can profit greatly from others' experience and observations. Even if not immediately available in whole or in part, there will likely come a time when they will be. No matter how careful or judicious the stockman, agriculturist, fruit grower or the follower of any other line of farming may manage his stock or products, he can not maintain its progressive improvement unless he is almost constantly infusing it with new blood superior, if possible, to what he already has. So no community within itself is capable of the progress necessary to keep it abreast of the times unless it is infused with a knowledge of what is transpiring outside at all times. Giving to the agricultural press full credit for its influence in the improvement of agriculture, there is yet something the press cannot do that the institute is capable of doing and does well. The press does not get the people together to discuss questions of interest to the community and the world outside as does the institute, nor does it exert the influence to make common cause of any great question of interest to the farmer.

Our state speakers give us able discussions of the latest and best methods of conducting farm work, from planting to harvesting crops, feeding, breeding and marketing live stock; in the management of the poultry yard, the dairy and the orchard; on building cheaply and quickly and planning for convenience. They give us sound and practical views of the public questions and many more things of incalculable value that help the farmer up the hill to prosperity. Now we are not claiming that the institute can and does work wonders like Alladin's lamp, but we do believe that it has already very materially benefited every community that has availed itself of the privilege of having it.

We believe there is more interest manifested in farm work in every such community, there is more thought and care given to farm work, crops get better and more attention, live stock is handled with more care and fed with better results from the same feed, there is a better understanding of what is required for successful farming and last, but not least, the farmer is beginning to understand his situation better, to see his limitations and is giving more attention to the education of his children.

It is a very good time, too, for the farmer to awake to the fact that the conditions for the farmer from now on are likely to be such as will require a thorough knowledge of the farm to enable him to conduct it successfully. That implies a wider knowledge of the sciences among farmers, better provision for their education, closer relations of farming communities, more concert of action and a more thorough knowledge of the world of business.

We believe the institute to be the best agency for promoting the farmers' best interests in the circumstances, but do not believe that it can accomplish all that is desirable, limited as it is in its influence. To accomplish its legitimate object its influence should reach every township in the county. We can conceive of nothing that would or could be of greater benefit to the farmer today than the systematic extension of institute work to every farming community. It would be to the science of agriculture what our common schools have been to the nation, its greatest security from dangers without and within. The agriculturist is said to be numerically the greatest factor of our country's population. That imposes upon him the greatest responsibilities for its credit, morals, honor, prosperity and peace and all else essential to a nation's respectability. The benefits to the country as a whole, from a majority of its citizens, educated to a thorough knowledge of and due appreciation of their responsibilities, cannot be over estimated.

ECONOMY OF STRENGTH.

BY MRS. H. E. ALLEN, R. R. NO. 17, EVERETT, OHIO.

[Read at the Farmers' Institute held at Ghent, Summit County, January 4 and 5, 1905.]

Even in these days of lavish expenditure we hear much of economy. Economy is a word not so easily defined as we think. Each person defines it for himself and then thinks his definition the correct one. I think its most common use is to express a judicious expenditure of money, yet outside of this there is perhaps no word in our language that has a wider or more varied meaning.

The test of economy is always a true balancing of the outcome and income. If a farmer pays sixty cents for a bushel of wheat and sells it for seventy-five cents, he gains fifteen cents or one-fourth the cost. Should he sell it for fifty cents he loses ten cents or one-sixth the cost. So in order to know either gain or loss we must always take the cost into consideration, making our estimate upon that. We will find that this same method holds good in putting economy to test everywhere. If the cost could be always reckoned in dollars and cents it would be an easy matter, and I believe more people would give it attention. Unfortunately dollars and cents constitute but a small part of the cost sometimes of the things we think we need, often none of it. So we find men and women losing out of life, day by day, the very things worth living for—health, strength, love, happiness, peace, friends—only at the end to see that life has been a losing game all through. The cost was never taken into consideration as they went along.

The saving of any one of these losses would form a topic for our consideration. In this article I will confine myself to that of saving strength, or economy of strength. Now, methinks, I hear some one who is full of energy backed by good health, for we have such even in these days of overworked women, say, "Dear me, I wish she would tell how to save money; we want to add to our farm or get new furniture, or a new buggy, or send Tom to college, or have Mary take music; there is no end to our needs and I want to learn all possible ways to save money that we may make more." Aye, that is just it, save that we may make. Now, why not apply that to strength as well? We all believe that "time is money;" let us make a new motto and say, "strength is money;" then it would be plain logic to say economy of strength is economy of money.

Each one of us has a certain amount of vital power or force. We may use this power or force constantly, recklessly and thoughtlessly. By and by this wonderful mechanism begins to wear out; then we become anxious and desperate efforts are made to repair it. The physician exerts his skill; nature tries to rebuild the wornout tissue. What is the result? This human machine starts up again; its owner declares it will do as much work as ever, but some day there is a sudden stop. That wonderful organism which might have run its three score and ten years stops sometimes ere half that time is past, because utterly worn out. If a man wishes to buy a costly machine and so run it as to wear it out in a few years, it is nobody's business but his own. He can replace it. But no man or woman has a right to use the life God has entrusted to him or her in this way. Who can replace the care, the companionship, the influence, the thousand things which make up our value as human beings? It is our duty to God, to our own family, to our friends and to ourselves to make our lives as longly useful, as quiet and peaceful, as free from impatience and fretfulness as possible.

How many women who have been housekeepers ten, twenty, thirty or more years have learned in that time ways by which their work has been made easier, thereby learning economy of strength. You no doubt will smile, but I am going to tell you some ways in which work can be made easier and I shall not charge you a cent for it; if my advice can lighten one woman's burden I have done no small thing. I will not dictate the day, hour nor even the minute when every piece of work must be done, for I remember my childhood and know how hard it is to follow such directions.

In the first place I think we should start right at the very beginning of the week. In these days of eagerness to accumulate wealth, these days of excitement and pleasure, Sunday excursions and Sunday entertaining, we are prone to forget that the first day of the week is a day of rest. Yes, it should be a day of rest and peace for both soul and body; a day when the tension of the working days be unloosed; when the heart should be receptive toward all good influences; when all care should be laid aside. Then when Monday comes we will be rested and strengthened for our week's work.

Monday is on the whole the most convenient day for washing. What vast improvements over the old time methods of washing we have. I shall not give you any method, for there are almost as many methods as there are women who wash, and each thinks her own the best. I consider it the hardest work a woman has to do, especially in the winter time. All women who do their own washing should be thoroughly equipped with all necessary conveniences for doing the work. Not as many homes throughout the country are supplied with a washroom with its stationary tubs, hot and cold water, drains and a dry room for cold stormy weather as should be. So make it a point to get all the help possible from the family, Monday morning, that you can without being unreasonable. If the water is to be carried plan it so the man or men can do it. Their strong arms and backs can do the work with comparative ease and quickness that would tire a woman before the washing really began. Children can be very helpful. I know it is a big temptation for a woman to take every step herself and not bother with teaching children, but this is not fair to either party. Children ought to know how to do things and mothers ought to have all the help possible.

Now, I am going to add my testimony to that of the many advocates of the new ironing system. These are days when it is stylish to slight the ironing, and I do hope you will avail yourself of the benefit of the style. Did you ever think of the number of clothes that are the better without ironing? If you are used to ironing every piece you will think me slack, yes, shiftless, indeed. By being careful in wringing and folding here is what I take from the line when thoroughly dry and put away without even so much as a touch of the iron: Stockings, dish towels, towels, night dresses, knit underwear, sheets, sometimes pillow cases. In the summer time these last go right back on the bed. It makes but little difference, if any, to the family if these things be ironed or not; the main thing is to have them clean and sweet. My conscience has never allowed me to go further. But there is enough left for plenty of hard, hot work.

By exercising a little care many a garment can be kept out of the wash. How often we see young mothers not strong and doing all their house work, dressing their little ones in white or nearly white garments which, in order to be presentable, require from one to two or more changes a day, when darker dresses, aprons and skirts neatly and simply made would look nearly as well and would be such a saving of time and strength.

The housekeeper of today should never wash and iron the same day. It costs too much. The night time is not sufficient for the needed rest, and the next day there will be an irritable, fretful woman possibly with a nervous headache and a day when nothing goes right. I hope the day will come when in every community there will be a laundry to which farmers' wives can send their washing and have it laundered at a reasonable price. What a saving of strength it would be.

What a burden to the modern housewife to cook her meals. We all must eat and all are interested in the eating question if in nothing else. How we need to use our common sense here. The most wholesome, the most nutritious food is not difficult to prepare, and no mother has done her duty to her daughter who has not taught her to make good bread, to prepare and cook different meats and vegetables in a wholesome and palatable way. Many dishes which take hours in their preparation come to our tables whose nutritive value is nothing at all, and which leave us losers as to health and strength, to say nothing of the money loss. A friend of mine told me her neighbor's family, a family of six grown people, ate twenty-one pies and seven cakes in one week. Think of the time and strength expended by the women in that home. Do you wonder the doctor often called at that home? I do not object to pie and cake, but is not our lavish eating of it a matter of habit rather than need? Neither do I believe in a stinted diet. The farmer, the working man, must have a variety and plenty of good wholesome food. We should give our cooking thought and study that we may be the gainers rather than the losers.

Now, as to our sewing, how many hours of nervous, anxious strength go into what we wear? The sewing machine, instead of lessening the work, often adds to it. We ruffle, tuck and stitch, forgetting that the best dressed persons in the world are those whose garments are of good material plainly made. In the making of many garments we need to ask ourselves the questions: "Is all this work I am putting upon it necessary? Will it add to the real happiness and comfort of the wearer?" Along how many lines of our work, by a thoughtful planning, might we not be savers of strength. We all know how we struggle sometimes to make each hour of the day do the work of two, and how when we come to balance outcome and income find that we have been the losers rather than the gainers; that haste, anxiety, wear and tear of nerves have brought us fretfulness, irritability, depression of spirits, loss of vitality. And what money can replace the loss? The continual monotony of house work is exceedingly wearing to both mind and body. So we need a change of scene; to get beyond our four walls if only for an hour, if not for a day or week. We need to see and enjoy all the beauty about us. Our Heavenly Father who wishes we should live simply and well, not anxious or over burdened, has placed much that is beautiful all around us by which and through which we may look up to Him gaining strength, happiness and peace thereby.

WOMEN'S CLUBS AND THE WORK THEY ARE DOING.

BY MRS. W. E. SCOTT, MONTPELIER, OHIO.

[Read at the Independent Farmers' Institute held at Montpelier, Williams County, January 25 and 26, 1905.]

It has been said, and doubtless with some truth, that women, as a class, are small in their dealings in a business way; that they will stoop to do petty things in a business deal that no man would be guilty of doing. Well, is it any wonder? Stop and think how most of their lives are spent. They are constantly mending this or that article to make it last a little longer; are figuring on running the house with as little expense as possible; keeping a sharp lookout that the grocery bill is not too large; watching the outgo from the kitchen that there be no needless waste, and in their cooking and baking are eternally measuring out condiments by the quart, by the pint, cupful, tablespoonful, teaspoonful and by the pinch or "dash." There's nothing very strange in the fact that they do become small in their dealings, as day after day, week after week, month after month, they pursue their household tasks.

In many homes the careful mother and housewife has been wholly unable to rise above the level of her flour bin and rolling pin. Her duties have held her there. They were not unpleasant duties, for there are few women who do not delight in keeping up every department of a well appointed home. There is a fascination for the feminine heart in keeping bountiful supplies of snowy bed linen and spotless, beautiful, table linen; in dusting and arranging pleasant, home like rooms; in possessing a cellar with rows of canned fruit, pickles and preserves; in making light, wholesome bread and dainty cakes; in serving excellent meals in the latest manner, and in having the whole household machinery run smoothly and pleasantly. But every woman knows that to do all this means the devotion of every minute of her waking hours to housework. It means no time for self-culture, but a gradual rusting and falling behind until she is far behind her own children in education along every line except her distinct line, housekeeping.

With the establishment of the Chautauqua course and others, there came an opportunity for the busiest housewife to enjoy self-culture. By devoting a few minutes each day to the work she had, in four years, completed a course of study. She was able to converse with her husband and children intelligently on the foremost topics of the day; had a knowledge of the diplomatic workings of the great world powers; of the art, literature and history of the leading nations of ages gone by and of today, knew much astronomy, geology and other sciences—in fact, she was a new woman. No less a housewife and mother, but she had learned how to economize time and effort in the housework, and to invest the gain in self-culture. The result was good and so the cause grew, and today there is scarcely a state in the union that has not its hundreds of clubs and thousands of club women.

Now a word as to women's clubs and club women. I am aware that those terms are in high disfavor with many men and perhaps a few women. Those who hold this disfavor are those who know absolutely nothing about the inner workings of these clubs. Some men really believe that a woman's club means much the same thing as men's clubs of our larger towns and cities. Nothing could be further from the truth. It has been said that "the woman's club movement is one of the most hopeful, one of the most progressive and one of the most forcible of the organized movements of today." The club women of the country include a large proportion of the most intelligent and most earnest citizens. You will scarcely find a trifler among them. These women can not afford to make a mistake. They are constantly in alliance and co-operation with the best and most practical movements of the day. There are very few of the great leaders of public opinion who do not regard the organized power of the woman's club movement as the shortest and quickest of all the avenues by which public conscience may be reached and public questions may be influenced. The wonderful advancement made in the intellectual life and endeavor among women is one of the most marked attributes of the past century. With the dawning of the twentieth century, woman's horizon has been extended and now there is seemingly no limit to her aspirations or her enlarged field of endeavor.

Although the woman's club originated with a desire to promote greater intelligence from the intellectual stimulus afforded, she soon became aware of the value of organized effort and she knew she had powers and capabilities which could, which ought to be, used for the good of humanity and thus came the desire for a broader field of labor.

While there is not an avenue of life into which the woman's club has not extended, yet its first influence is felt in the home. The strength and culture gained by promoting a deeper insight into human nature, a greater knowledge of the age, a deeper interest in the questions of the age, an abounding love for nature and the beautiful, all these are felt first and strongest in the home. "To woman is entrusted the care of coming generations; to her is given the shaping of characters, the guiding of careers, and the standard of living will be raised, not only in her own immediate surroundings, but throughout the community where her powers are exerted and her faculties developed."

As I have before stated, it is through organized effort that the woman's club has become the power in the world that it is today. Most clubs, realizing this fact, are members of their state federation and so members of the national federation. The Ohio federation closed its ninth year of work October, 1903, with a membership of three hundred and five clubs and eleven thousand members. As a rule no club enters upon a broader field of work until it becomes a member of the federation. For that reason a small minority of woman's clubs are study clubs solely. They adopt a course of study for the year, attractive year books are printed, meetings held, papers read, talks given, discussion enjoyed, current events noted, a critic's report given and a right good time enjoyed by every one present. Self-culture and sociability are attained—deep and lasting friendships formed. We all realize the benefit derived from and the influence exerted by such a club. But is it not, in a sense, a selfish club? Is it not almost entirely for ourselves? Do we do anything for others at our meetings?

Many such study clubs, waking up to the fact that they were supremely selfish, have broadened their work somewhat. I know of one such club that gradually added special days to their year's work. One was called the "Old Ladies' Day." Each member was allowed to invite one old lady as her guest on that day. A program consisting of an excellent paper showing the value of close friendship with women older than ourselves, old songs, recitations of old favorites and piano music consisting of old melodies with their variations, was most pleasing. After this came the piecing of blocks; after each block was pieced the name of the person piecing it was written on a white section of the block and outlined in silk. Other old time amusements and occupations followed and then an old fashioned tea was served. That delightful afternoon spent with those dear old ladies will always be a "fragrant memory" to every member of that club. Then in a somewhat similar manner a pleasant afternoon was spent in entertaining guests who were farmers' wives. Then there was Michigan day and Indiana day with their special programs and invited guests. Thus the work gradually broadened until the club felt an earnest desire to come in touch with other clubs of the state, to know more of their work, to become an active, living member of the state federation and to perform a definite part of its work. And so it is with every wideawake, enthusiastic club I believe. It is only when we become federated and become familiar with the inner workings of the many clubs of our state that we wake up to our responsibilities and capabilities.

Let us take just a glance at the work being done by the clubs of the different state federations. Their different lines of work now number twelve, namely, traveling libraries, traveling galleries, civic improvement, domestic science, juvenile courts, the child labor problem, arts and crafts, education, philanthropy, legislation by petition, the consumer's league and forestry.

It is a little over eight years since the first traveling library was sent out in our state. Then it was an experiment; now it is supported by the state and traveling libraries go to nearly every hamlet, school district and woman's club in Ohio. There are now nine hundred traveling libraries in the state, containing twenty-five thousand volumes. The annual appropriation of five thousand dollars was first secured in 1898, largely through the efforts of the federated clubs. President Roosevelt, in his first message to congress, said: "Perhaps the most characteristic educational movement of the past fifty years is that which has created the modern public library and developed it into broad and active service." Through the persistent, united efforts of the ten thousand club women of Ohio these traveling libraries often become the inspiration which leads to a free public library. Last year there were but sixty-nine free public libraries in this state of four millions of people. When the report of the library extension committee of the Ohio Federation of Woman's Clubs for the past year is published, this number will be shown to have increased, and as you notice the increase from year to year, remember that the credit belongs to the club women of our state. Thirty-four state federations now have traveling libraries.

In many states a traveling art gallery, in charge of a personal conductor whose interpretations awaken interest and add immensely to the value of the collection, visits every club town. The collection consists of statuary and pictures, reproductions of the masters and loan collections. The expense to each club is trifling. Art objects and art study have also been introduced in many public schools through the efforts of club women. Indeed, many clubs make a practice of presenting some work of art to the schools in their city or town every year. And so fine pictures and casts beautify many school rooms. Then, too, attention is called to the tinting of walls and ceilings, and trees and shrubs planted in the school yard.

The work of civil service reform is comparatively new; the first committee was appointed only two years ago. The work has been started in a systematic way and the responses to letters and appeals have been most gratifying. The main object is to divorce the question of politics from that of education, and to secure men at the heads of the various city departments, and their assistants, who shall be chosen for efficiency and merit, rather than political usefulness.

Domestic science is now taught in some of our state schools and institutions and in many of our private schools. Through the efforts of club women many churches now support such schools—the science of baking, cooking, sewing, darning, mending, trimming hats, etc., being taught in the basements of the churches by instructors. Sewing is taught for two cents a lesson, while the highest price paid for instruction in any work is ten cents. But until domestic science is taught in our public schools the masses will never be reached and toward this goal the federated clubs are pressing. Will it not be a glad day when the sixty thousand girls enrolled in the public schools of Ohio leave those schools thoroughly instructed in the arts which pertain to the home? Will it not be worth something for them to be not only excellent cooks and housewives, but to understand also the chemistry of foods, what makes bone, what makes blood and how to get the most nourishing foods with the smallest outlay of money? Remember that "domestic science means domestic bliss."

The arts and crafts committees of the New England federations are observing the tendency of the revival of interest in handicraft, and stimulating women to be careful concerning the beauty and utility of what they buy for their homes and their clothes. Many clubs have given exhibitions of handicraft, calling attention to the beauty and utility of the products of the old domestic industries and encouraging their revival in localities where it would be an economic advantage to the inhabitants.

Legislation by petition is practiced by every New England club and by many others. Perhaps two of the best results obtained are laws that have been passed in some states regarding child labor and juvenile courts. Ten states now have juvenile courts for the care and protection of the so-called child criminal. In what is called the detention home these children are kept by themselves, away from the criminal classes, and often opportunities given them to lead better lives. Illinois first passed the juvenile court laws, and such a court was first established in Chicago. Hundreds of boys are thus saved from becoming criminals and the character of the future citizen built up; for "child saving is soul saving."

If we are to retain our industrial supremacy, we must guard the efficiency of labor. "Any nation that permits child labor is drawing on its capital." The number of children employed in various gainful occupations has more than doubled in the last decade. The club women of the south are united in their efforts to wipe out this blot on their civilization. They have already rescued twelve thousand children from the noisy looms and lint-filled atmosphere of the cotton mills. Have we not overlooked similar conditions in the north? Ohio has sunk in the last ten years from third to fourth place in the percentage of those who, between the ages of ten and fourteeen, can read and write. It is time for us to sound the tocsin of alarm and inquire into the cause. In New York it is now illegal for an employer to permit a child under sixteen years of age to work longer than nine hours in one day. In Illinois a child under sixteen can not work longer than eight hours in one day, nor after seven in the evening. In both states such a child must be able to read and write the English language before beginning to work. It is confidently believed that this problem of child labor will soon be easily remedied by efficient legislation, and a movement is on foot whereby women shall be appointed as inspectors of factories where women and children are employed.

The Consumer's League is another national work that has been taken up in a measure by organized women. The subject is presented through lectures to clubs; small leagues are formed and concentrated action in asking for white goods bearing the proper label, solicited. Exhibitions of such goods are held and lists of stores where they can be secured given out. Connecticut has seen this work so far advanced that a state league has been organized which brings together all other bodies in the state interested in the same movement. Rhode Island has also formed a branch of the national league.

The club woman's work along educational lines is so extensive and varied that we can only mention a few of them. New England clubs take the lead in this work. One club in Danvers, Massachusetts, has supported a free kindergarten for six years. Other clubs furnish kindergartens through the summer, play grounds with trees and fountains for school children, vacation schools, manual training schools, sand gardens in the most crowded part of the city, and school kitchens, while the Massachusetts state federation is now supporting a model school in the south for the benefit of the children of the poor whites. In this school are taught domestic science, gardening and manual training in addition to the usual elementary work. It is hoped that school life of this type may help to restrict child labor in that it will so deeply appeal to the children that they will not desire to work in the factories.

The philanthropic work undertaken by the woman's clubs is energetically and generously carried through. One club has furnished an infirmary, others have hospitals, another has twelve thousand dollars towards a home for the aged, while another devotes one-fourth of its annual income to charity. Another practical line of work in this division is the maintaining of rest, reading and lunch rooms in our towns and cities. To these rooms working girls and women, or girls and women from the country, are welcome. Here they may come at the noon hour, eat their luncheon, buy a glass of milk, cocoa or coffee for two cents, enjoy the rest and quiet of the rooms and read excellent books or periodicals. A member of the club, as a rule, has charge of the room, or a woman paid by the club.

The committee of forestry is one of the most zealous and efficient committees of a state federation. As you may know from its name, its object is to preserve our forests, to prevent the needless cutting down of the grand old trees in our towns and cities, and to encourage and promote the planting of trees. Encouragement is often given by example. The reports of this committee are among the most interesting given at the annual meeting of a state federation.

As an outgrowth of the nature study adopted in many clubs, has come an abiding, deep seated, almost passionate love for our native birds and a conviction that something must be done and that at once, for their protection. As a result many states have laws for the protection of our "little brothers of the air." President Roosevelt, when governor of New York, signed one of the very first bills for bird protection. This bill, the Hallock bill, prohibited the commercial use of the plumage, skins or any parts of wild birds, with the exception of the English sparrow, crow, hawk, crane, gull, raven, blackbird and kingfisher. This bill was a long step in the right direction, but it was a matter of regret that the bill left our beautiful seagull without the law's protection. The slaughter of birds for millinery purposes has almost exterminated some of our finest species and much is still to be done in educating public opinion. Not many women who are loyal members of a federated club ever wear a single bird ornament on their hats. Ladies, let me tell you one fact right here. You all know that beautiful ornament the aigrette, but do you know that one aigrette costs the lives of from four to six birds? The aigrette is the wedding dress of the male snowy heron worn only during the mating season, hence the birds must be killed while rearing their families, and the nestlings, lacking their care, die of starvation. In Florida the plume hunters have practically exterminated the snowy herons, or egrets, as they are often called. Doubtless the most effective work that the clubs can do is to create a sentiment among women against the wearing of any bird ornaments—let the demand cease and the slaughter will stop. The president of the American Ornithologist Union says: "It would be a wise investment in actual dollars and cents for every farmers' club and institute in this land to employ a naturalist to teach the names of the birds about them, and the part that each one takes in the preservation of nature's balance."

And now we come to perhaps the favorite line of work of most clubs. Rapid strides have been made along this line and the people at large have become so interested and so willing to help that the enthusiasm is contagious; I refer to the civic improvement work. When people persist in building not only cheap houses of nondescript architecture, but in painting them pea-green and brown, or slate color and ochre, one may be fairly sure that no vines or blossoming shrubs, far less fine trees, will add their softening touch to such premises. Almost equally sure it will be that the roads near by will be shorn of their lovely natural growth, and that instead of wild roses and clematis, elder and bittersweet, we shall drive past piles of brush with here and there communities of tin cans and occasional patches that have been cleared and rendered unsightly by fire. I can give you no better idea of what has been done in the line of civic improvement than to speak of the marvelous work done by a single federated club in Pennsylvania for the town of Honesdale. Men are received only as honorary members of the club and have no share in the work done by these women. Funds are raised by annual dues, fifty cents each for working members, one dollar each for honorary members. An entertainment or two is given each year to swell the funds. They have not much money to handle. The largest gifts ever received were from ten to twenty-five dollars. With a few hundred dollars in their treasury each year the members have joined hands saying: "Let us make this the model town of Pennsylvania." They have made flower beds, laid out parks and kept them in order. The banks of the river which crossed their town have been made beautiful; no ashes or rubbish are allowed to be dumped there; on the north bank is now a five-foot path shaded by a double row of maples; vines have been planted along the retaining walls which they built, and the space thus gained filled in and flowers planted; a long row of hydrangeas is reflected in the water from the south bank; a fountain has been placed in the river about twenty feet from the bridge. A little triangular park takes the place of what was for years a frog pond and dumping ground. The park is graded, has fine paths, trees and shrubs and a large flower bed in its center. Another park with a large fountain in its center, is surrounded by a circle one foot wide of tulips in the spring and flowering plants in the summer. The grass is kept neatly cut and the weeds are kept down at the sides of streets and on vacant lots. Cans, painted dark green and lettered, are placed at intervals along the streets for the reception of rubbish and paper. The school children were interested in this work and did pretty well. All this is only the beginning of their work for their town, yet this is more than enough to immortalize the women of Honesdale.

I could give you dozens of just such examples, for this is the most contagious work in the world. Like a freshly painted house in a neighborhood, it starts nearly everybody in sight to planning improvements on their own property. There is not a village in the land but can mend its streets and walks, make the fences tidy, keep down the weeds and plant trees and flowers.

Tradesmen can be taught that the sidewalks are not the place to store empty boxes nor expose food stuff to the contagion of the dusty streets. They can be taught that the alley can be made neat and beautiful and kept so. There is no reason why every town should not be a beautiful one. High board fences that cannot be dispensed with can be covered with vines and thus shut out the bill poster. telephone poles can be painted green, or white or wreathed with vines; school grounds can be beautified. Beautiful lawns and curbs are within the reach of every one.

In every farming community there should be at least one good literary club. The old fashioned singing school is no more. Let the literary club take its place and give to it the loyal, earnest support that your fathers and mothers gave to the old time singing school. It is just as worthy, if not more so, and in a broader way. There is just as much talent among the people on the farms as among the town people. The traveling library and art gallery are yours for the asking. By all means have one good study club in your community. Then set a good example to every member of your community by keeping your home surroundings neat, trim and beautiful.

Nothing is more pleasing to passing travelers than beautiful, well-kept farms and country homes, with their fields of waving grain, trees, shrubs, flowers and gardens.

And, finally, this work of which I have spoken is not entirely woman's work—it is man's work, too. "And could we dip into the future and see this country as it shall be, increasing in beauty and strength, then 'our sons may be as plants grown up in their youth, and our daughters may be as corner stones, polished after the similitude of a palace.' Then there will be no question of woman's rights or child's rights, but all learn and believe that 'woman's cause is man's cause. They rise and sink together, dwarfed or god-like, bond or free. For there is but one cause—that of humanity.' "

WOMAN AS AN INVENTOR.

BY MRS. WM. EISENMAN, KUNKLE, OHIO.

[Read at the Independent Farmers' Institute held at Montpelier, Williams County, January 25 and 26, 1905.]

He who would be a blessing to himself and the world must become absorbed in some pursuit which best suits his ability. The present age of enlightenment demands this from all. It is through industry, labor and continual activity that the rarest beauties and strongest characters shine forth, and there are no joys so sweet, no pleasures so satisfying as those derived from a useful, active life.

Not so very many years ago regular employment for woman was considered a disgrace, her opportunities for advancement were few, her dependence almost absolute and her powers undeveloped. Long did she struggle in an atmosphere so chilled by prejudice that her efforts gained little success. It has been only within the past few years that woman has received any of the honors of toil and industry; as soon as she began to apply herself to some definite end—engage in some useful occupation—she began to realize her strength and the world to recognize her power.

This practical age has become disgusted with the aimless, dependent members of society and the idea that girls may, and ought to, enter upon a useful career, really work and grow independent, is leading woman from her narrow, aimless life to positions where she may benefit herself and the world. The question is no longer whether she is happy and satisfied with a life of ease, but can she in this way raise the value of her life to the highest degree.

The progress of woman in the present century has been great in science, literature, art and invention and she is commanding position in these and other lines of activity.

While as an inventor she has not produced so many important results as she has in other fields of thought and exertion, this has been wholly due to her environments, her lack of educational advantages and her few opportunities to compete with the men for the world's prizes. But the prejudices of the world against woman are being rapidly overcome and we look for her to step well to the front in the most profound achievements within the next half century. The universities and colleges in all civilized countries are opening their doors to women, and they have not been slow in availing themselves of the opportunities thus offered. The spirit of advancement purifies the moral atmosphere and is giving to woman a life of activity and made it possible for her to raise the value of her life to the highest, and prepare her to grace with dignity some position whether it be as queen of the home, which is woman's happiest realm, or in the more public pursuits of life.

Few American women there are who have not some inventive genius. Who of us in going into a neat, cosy little nest of a home does not detect many little ingenious contrivances made by an energetic little woman. She may not have them patented, but nevertheless she values them highly as being evidences of her own ingenuity. When we look back over the past ages and see how woman has been looked upon by the world and the little encouragement she has received from the sterner sex, and how after such heroic struggles she has secured her social, intellectual and industrial prominence in the world, we cannot help but feel proud of her, but all this was necessary before she could start on an even footing with man and show her power in professional and scientific effort. She is now better prepared to illustrate her inventive genius than ever before.

The first patent ever issued to a woman was granted in 1738, to Sara Gerome, for a machine for cutting wood into thin pieces for use in making bandboxes and sword sheaths. The first invention by woman mentioned in our patent office reports was a device for weaving straw with silk and thread by Mary Kies, May 5, 1809. A wealthy banker's wife, of New York, invented a machine for twisting wire rope, the patent of which she sold for fifty thousand dollars. The Burden horseshoe machine, turning out a horseshoe every three seconds and by which thirty-three million dollars was saved to the public in fifteen years, was invented by a woman; also many important attachments to the reaper and mowing machine. The invention of the baby carriage has remunerated a San Francisco lady to the amount of fourteen thousand dollars.

In the invention of baby jumpers, trundle beds, juvenile toys and games, churns, dish washing appliances, washing machines and other similar domestic devices, women naturally have been prolific.

A Philadelphia woman is responsible for an invention by means of which hundreds of ready made barrels are turned out every day, which she furnishes to the sugar and oil refineries at a comfortable profit. Mrs. Emma Mills has invented a typewriter attachment and personally superintends the manufacture and sale of her invention, which required the making of special tools to facilitate the output of the article.

Mrs. Cynthia Westover is another woman who has made her mark as an inventor; she has patented an improved dumpcart which has been practically tested and works perfectly; it may also be used in coaling vessels.

Mrs. Eubank, of California, has invented a combined trunk and bureau which is complete in every detail for home use and travel.

The paper pail was invented by a Chicago lady. A woman invented that wonderful little patent shirt button which has been such a boon to the men and saved the use of so many expletives. The furnace for melting ore, a process for burning petroleum to generate steam, a spark arrestor for locomotives, a signal rocket used in the navy, a steam whistle and a writing machine all were invented by women.

The deep sea telescope for bringing the bottoms of ships into view without raising them into dry dock, for inspecting wrecks and making examinations for torpedoes, was invented by Mrs. Mather and her daughter.

The Metropolitan Elevated Railway Company, of New York City, paid Mrs. Mary Walton ten thousand dollars and a royalty for life for an invention which deadened the noise on their lines. Edison had worked upon this patent for months. He walked up and down their lines so often with a stick in his hand that the employes called him "the Wizard."

Miss Montgomery, of New York, has recently been granted a patent for an improved war vessel.

Mrs. Martha Coston invented the Coston signals, used to such good advantage during the Civil war. They have been valuable in the life saving service and have been adopted by many European governments.

Mrs. Green, with the assistance of Eli Whitney, invented the cotton gin. Mrs. Green, being a wealthy Georgia plantation owner and seeing the slow process of separating the seed from the cotton, called into play the ingenuity of Mr. Whitney (who was boarding with her) for the construction of a machine to do the work more rapidly. Wooden teeth were tried at first without success, and Mr. Whitney became discouraged and wished to give it up, but Mrs. Green with that sticktoitiveness, peculiar to woman, would not consent and suggested the substitution of wire teeth and within a few days a model was completed so perfect that all succeeeding gins have been based upon it. Mrs. Green has been given but little, if any, credit for her very important part in the work.

Mrs. John Miller, of Syracuse, New York, noticing that in all the great fires more people lost their lives from the effects of suffocation by smoke than by flames, set to work upon a device for relieving this condition among firemen, and has succeeded in producing an article of head wear which is practically fire proof, heat proof and smoke proof. It is made of asbestos cloth; holes in which mica is fitted are cut through for the eyes; over the mouth is a sponge kept moist which permits the fireman to breathe. With this cap the firemen who tested it in Syracuse entered a room full of smoke and stayed there for thirty-five minutes without any apparent ill effect, and the fire department pronounced it the best addition to their weapons they have yet received. Another wise scientific suggestion of this talented inventor is the use of an overcoat, also made of fine asbestos cloth.

A cooking clock was recently invented by a woman. What a blessing it would be to us women if some one's fertile brain would be able to invent a device for doing the cooking and general housework, especially when we have a literary turn of mind.

From the foregoing we have only a small idea of what woman has accomplished in the way of invention. From 1790 to 1897 there were four thousand, four hundred and fifty-eight patents issued to women, about one hundred of these being foreigners. The past year there have been more than five hundred applicants for patents.

The number of patents taken out by women is increasing rapidly year by year, marking the step of education, civilization, wealth and luxury. The rapid increase in woman's patents is clear evidence that it has been opportunity, rather than faculty, that was lacking to place her among the inventors of the day.

Who of us visiting the World's Fair was not proud of the woman's building! Beautiful in conception, design and execution, it stood there with its gathered treasures marking an era in the growth of woman's power of accomplishments that was full of interest to us all.

But woman is only half awake to her possibilities. The more she becomes familiar with the commercial and industrial needs of the country the better she will be able to master the mechanical complexities of the day.

Edison prefers women to assist him in his electrical inventions, as is made evident by the fact that he has on his pay roll the names of more than two hundred women. He has said that woman has a more delicate perception of machinery in one minute that most men have in a whole life time.

If woman can accomplish so much with the little effort she has put forth and the capabilities she has shown amid the many obstacles in her way, much more can she achieve with stronger incentives, better preparations and greater freedom.

BETTER USE OF TIME FOR FARM WOMEN.

BY EUNICE L. BARRETT, LEESBURG, OHIO.

[Read at the Farmers' Institute held at Leesburg, Highland County, December 21 and 22, 1905.]

In this age of progression and activity in public work, when the door of almost every avenue in public business is open to women, it behooves the women on the farm to get into action, fall into line, and with the women in the city and of all other occupations march forward in the line of advancement and culture. The day is past when the farmer is called a hayseed and his wife and daughters are expected to know only the things pertaining to the farm. We can content ourselves no longer with knowing how to care for chickens, make butter and do general housework.

True, it is an accomplisment to know how to do these things well, but we must not let our knowledge and education stop there. Every woman's first duty is to her home and family and the way to fulfill that duty is to plan in some way, with all of our household duties, to find time to broaden our intellect and extend our borders outside our own homes so that we may enter a greater field of usefulness, thereby receiving mutual benefit.

There are so many things we would like to do for our own development because of the good to our families and the help we might be to our friends and neighbors, if we could only find the time.

One of the most neglected things for our advancement is the reading of good literature. We often hear women say: "I would like so well to read more, but I cannot find the time," or "We do not take any magazines or ladies' papers because I cannot find time to read them." We try to get everything done and then try to have spare time for reading, but when we get everything done we find it has taken all of our time, thus depriving us almost altogether of recreation. I believe we should neglect our housework, if necessary, in order to get time to read. We would better have a few cobwebs in our houses than to have them all over our brains, so that when we do get leisure for reading our thoughts cannot penetrate their meshes.

Some of us have little ones, and I think you will agree with me when I say that a mother often does not have time to enjoy her babies and little ones as she should. We are expected to do just as much work as if we had no little ones, and we become so tired and wornout that we neglect them; not their physical needs, perhaps they are all supplied, but their training and the bringing out of their best impulses takes more time than the average mother can give. We often reprove, perhaps scold, and maybe punish, when if we had more time to spend, more time to think what would be best to do, we might accomplish our purpose in some other way and benefit the child much more. Let us try to find time for this one of the greatest and best opportunities we may ever have for doing good and being useful to mankind; and as they grow older and enter the school room let us still try to give them a reasonable amount of time, being interested in their school work, visiting the school, helping their teacher by urging them to come up to the highest standing possible for them to reach.

It is said of Jesus that when He was on the earth that He went about doing good. Would it not be well for us to follow His example and spend some of our time going about doing good? There are those in every community who are sick or in trouble or sorrow, are sometimes impressed with the thought that we ought to go to their homes and give them our sympathy by our presence whether in words or not; but we put it off and finally do not go at all, often from neglect, but more often because we cannot find time. Let us remember that

"A word kindly spoken, a smile or a tear,
Though seeming as nothing often will cheer."

Then we want and should have some time for recreation. The old saying "all work and no play makes Jack a dull boy" is as true as it ever was.

I once heard one of the best lecturers and farmers in the state say that when he was married, though the parents of both were well to do families, they believed in letting the young people "paddle their own canoe," so they were quite a good deal in debt for their home, but they made it a rule to lay aside twenty-five dollars each year to spend in sight seeing for recreation. At times they would hardly know where the money was to come from, but they managed in some way to have it. He said: "True, we had to economize in a number of ways, such as making our clothes last longer and a cockerel plume take the place of an ostrich feather on our little girl's hat, but always found that we were amply repaid, for what we sacrificed in other ways we more than gained while on pleasure excursions." We are not all situated so that we can go far away for recreation, but let us try to visit the places of interest within our reach; if we cannot do this a visit to a friend or even a run down to the brook, or out in the forest, and a study of nature, the beautiful things of God's own handiwork, a change of almost any kind, leaving our home cares for a little while does us much good, and we come back home with renewed energy ready to take up the routine again.

But how shall we get time for all of these things? One woman can not do every thing and the only way I know is for us to do away with some of the non-essentials of housekeeping. Why do we sit hour after hour, day after day, tearing rags in little strips and sewing them together again to make a carpet when we can go to the store and get a carpet all ready to put down for almost the same money we pay for chain, coloring and weaving? Why do we cut calico into little pieces and piece them together day by day to get enough for a quilt when we could buy calico, place some batting between and tie with some pretty yarn and have just as warm a quilt as if we had spent weeks piecing a top for it? If we want something nicer we can use silkoline, which will make a very pretty as well as serviceable cover. But if at times it seems economical to piece a patchwork quilt, to use your scraps, cut them in as large squares as possible from your pieces and sew them together on your sewing machine. You may not have the pleasure of priding yourself on your needle work, but you may have the pleasure of spending your time in a more profitable manner.

Why spend so much time hemstitching when we could do nice looking hems in a little bit on our machine? The making of pretty things in the line of fancy work and the painting of beautiful pictures are both refining in their nature, but let us not spend too much time at these things to the exclusion of other things more important. Why do so much ironing on common clothing? Why spend so much time planning and making dresses? Let us dress neatly, but put our nerve force to better use than trying to follow the extremes of fashion. Why spend time knitting when we can buy the yarn and have it knit at the factory almost as well? Why spend so much time cooking? Why have so much variety? Let us have everything good, but not so much at a time. Why stand over the stoves making jams, preserves and pickles when the canned fruit takes so much less time and is more wholesome? Why spend so much time sweeping, dusting and cleaning? If we have to neglect every thing else to have our houses look just as we like to see them, thus dwarfing ourselves physically, mentally and spiritually, it would be well to give them less attention and use some of the time in doing something that would be more profitable.

Let us try to do all the good in all the ways to all the people we can, and content ourselves in our homes with simple living, pure pleasures, high thinking and noble doing, so will our lives be happy, peaceful and full of joy.

COOKING AND WHAT MAY BE DONE WITH IT.

BY MISS VALERIA RILEY, WASHINGTON COURT HOUSE, OHIO.

[Read at the Farmers' Institute held at Jeffersonville, Fayette County, February 8 and 9, 1905.]

We cannot deny that the great question of today spoken by the hearts of the majority of women is: "What am I fitted for, what can I do and how can I do it?" Possibly many are at this moment saying anxiously: "Now has come the time when I must do something, and what?"

There are two considerations that confront us and prevent us from choosing wisely and profitably. First, we are always striving after something that will not affect our social standing in the eyes of our neighbors; second, when considering a branch of work we invariably scan the completed specimen of some sister workman and are awed by its immensity, forgetting that we are not expected to present a rounded result at first, that patience and perseverance are the secrets of all success.

When debating a field of work never look at your occupation through your neighbor's eyes, for nine chances out of ten she does not know as much about it as you do. Do not expect your work to dignify and sustain you until you have labored for your work and dignified it. Stand out alone and look it fairly in the face to learn if you are suited to accept it; uplift it and enable it to help you; be willing to consider the beginning without reference to the end, and in this is constituted the important subject of our talk on cooking and what may be done by it.

To show how a small beginning in cooking grew to a prosperous employment, because earnestly and enthusiastically entered into, I will tell you of the venture of Jennie C. Benedict. When in 1893 she found herself face to face with the fact that she must fall into the ranks with the great army of working women, she saw that the store and office was full, so her thoughts turned to cooking. Knowing that she could make fruit cakes, she began by taking orders for them among her friends and made them in her mother's kitchen, but in a few weeks orders became so large that the family kitchen was too small, so a workshop had to be built, then she sent out her circulars stating that she would take orders for food from a cup of chocolate up to supplies for a large reception. So steadily her work grew until now she has her own cooks and waiters and a large business. Loving her work, she studied it as a science and an art and at present is teaching classes in cooking at her home and in other cities.

This is only one case of thousands that are today taking place, and cooking is now becoming one of the essential phases of life. A person that is not a good cook stands very little show in making a home life pleasant, for the secret of housekeeping lies in education. Would you like to see the housekeeper's millennium? Then treat housekeeping as a profession and service as a trade. The great trouble of today is that woman has failed to realize the importance and dignity of her profession. If a man is what he eats, is not the kitchen greater than the university? Many a career has been ruined by ill-made bread. Many a destiny has been achieved in consequence of a good dinner. Let mistress and maid both receive the same thorough training and the vexed servant girl question will be a thing of the past, for there are now cooking classes in all the cities where the girls can receive training at very little or no expense, and after they have taken lessons in cooking they are able to demand much better wages and do much better work, for any person will willingly pay a girl twice the usual wages if she can cook a good meal and bake bread so they can eat it.

Many girls are now choosing this line of work, for they receive much better wages than those that go in the stores and offices; a good cook can now get from five dollars to twenty dollars and even more a week, and waitresses can get from six dollars to twenty-five dollars a week with board and room. and there is still room for thousands of more all over the country at good wages and not as hard work as clerkship and office work.

There is no work that is in need of volunteers more than this noble work. Noble because by the proper preparation of food it brings pleasure to the home, makes happier and brighter children and brings joy and happiness to all.

I once heard of a young married couple who were seated in their parlor, after they had finished their supper and the young wife seated herself at the piano, and, after playing a selection, turned to her husband and asked: "How did you like that, John?" "Oh, that was fine." "Why, that is the very piece I played last evening and you did not like it then." "Well, the potatoes and biscuits were not burned this evening."

If boys also would pay a little more attention to cooking it might be well for them, for many a good steak has been spoiled and a great deal of sickness and even death caused by poor cooking. Even in Libby prison and Andersonville where the pinch of want was sadly felt, good cooking came to the rescue on more than one occasion, and one of the survivors tells of a marvelous mush made of corn meal and cowpeas that was so delicious that it consoled the men for the loss of Thanksgiving turkey.

It fairly makes one's mouth water to hear one of the veterans of the Civil war at a banquet or camp fire tell how a cup of coffee tasted in '62. Good Java coffee carefully roasted, ground with the butt of the musket, was boiled in great kettles over the open fire, and when sweetened with brown sugar and ladled out in pint tin cups, clear as amber, fragrant as violets, was a beverage to make a man forget discomforts and feel like giving thanks to God.

When we read of the coffee which our brave boys drank in Cuba and on board the transports, half roasted, half burned and altogether vile, we can not wonder that some of them sought comfort in the army canteen. However, there was some good cooking done in Cuba as is shown by the experience of a Worcester boy, a member of the Second Massachusetts regiment, who, with the very same rations of which others so bitterly complained, managed to keep his company strong and well. This goes to show how needful it is for us all to learn the art of cooking.

Cooking is an art because it is capable of unlimited growth, because it embraces the study of form and color, and most of all because it compels the perfect union of all things in its domain. The cook must know just when to add or to withhold the grain of pepper or the sprinkle of salt to obtain the flavor; nor is this sufficient, he must understand the person for whom the meal is prepared and plan the one for the other, so that they will agree as one; by such subtle combining does cooking become an art.

Cooking is a science because in the preparing of foods we are brought in contact with the laws that govern the animal, vegetable and mineral kingdoms. Chemistry is our constant companion. Nor can a cook deal with what is already finished. She must be an inventor. She must see in a cabbage or turnip such possibilities as will transform it from its original state to a dish fit for the gods.

You probably think I have placed cooking under a rather high standard when I say that cooking is a science, an art and a philosophy. But did you ever consider that food and the preparing of food is the means by which our great social engine is supplied with energy? Did you ever consider that food retards or advances the work of our body and mind, and therefore retards or advances national progress to a degree by no means small?

The great sun gives its energy to the seeds below the ground, which under its influence become vast expanses of wood, and by the aid of the same energy that raised it the forest flourishes, falls and decays, becoming great peat-bogs, and finally coal, to burst into warmth and flame and energy again. Do we consider that power small which gave such strength for such a transformation? Shall we despise the power that builds us up and enables us to have strength to labor?

Here is what Mrs. Helen Watterson Moody says: "Girls ought to be trained for their work in life just as men are, and from a higher point of view than has ever been taken before. I would gladly have exchanged my small birthright of Latin and Greek for the ability to make one single respectable mess of anything half so good as pottage."

In this short space I have tried to show the use of cooking, the dignity of cooking and the place of cooking in the present day. I have said nothing of its noble past, for noble it certainly is. Among its devotees we find the greatest of the world, scientists, artists, philosophers, poets and potentates—all have found it a friend. Dumas was a cook, Balzac honored cooking and some of our loved memories of the English classics are found to be Charles Lamb's "Dissertation upon Roast Pig," Dickens' delicious concoctions in "Pickwick Papers" and Thackeray's inimitable description of a French chef. Nor have I stepped far enough back in the ages to the time when the feast was honored as a religious ceremony or to the grand old Greeks who reverenced that which nourished their bodies, and whose women from matron to the youngest maid knew the art of cooking. Their feasts we all know were monuments of magnificence, the legends of which have come down to us of today. Yet we have found that like any truly great object, cooking may own a simple beginning and opens readily its prospects to the one earnestly seeking it.

Cooking may be used as an honorable and practical means of livelihood for those who find that it has become a necessity for them to enter the fields of labor. We find that this is not its only use; but that it may also teach, and that from this revered and womanly occupation we may learn as well as in the more exalted fields of the "new woman's" sphere.

We have found that cooking possesses the dignity of an art, a science and of a philosophy, and for its place in this age it is one of the still unseen powers that uplifts and enables our great people to progress.

THE YOUNG MAN AND THE FARM.

BY C. SHERMAN PARRETT, LYNDON, OHIO.

[Read at the Farmers' Institute held at Bainbridge, Ross County, February 16 and 17, 1905.]

To outline the career of a man one must have some inkling of his training and environment as a boy. Some boys are reared amid favorable surroundings and many have very unfavorable conditions for development. Naturally we are inclined to select favorable surroundings and conditions. The opposite would read well in novels and biographical sketches, but at a farmers' institute it would grate on our ears. Fortunate, indeed, is the boy whose trend of mind is so distinct that no error can be made in his training, and whose parents are able to discern this trend and encourage it. Not many months ago I saw a miniature automobile which a boy had constructed out of cigar boxes and glue and using the works of two alarm clocks for its motor power. That boy has a special trend of mind and is being helped to develop this tendency by his parents. Many boys have a distinct liking for farm life and work, and should be encouraged and helped.

Give your boys an interest in the products of the farm. If they have an inherent desire for farming, if they like the pure air, out-of-door work, and plenty of elbow room, then they will make good farmers. Misfits are common in all occupations and farm life is no exception to this rule. It is a pitiable sight to see one following an occupation for which he has no liking. Such a one can never rise above mediocrity. A boy must have some tendency towards the work which he chooses for his vocation if he be successful; when this tendency is observed, gently push the work which he likes in his way. If it is the garden or truck patch then set aside a spot for him which he can call his own and show how and tell him when it should be planted and cultivated, but do not force it upon him. Make him believe that he is doing it of his own free will. Lead gently rather than force. If his liking is for live stock, give him something in that line. Do not give him a pig and call it your hog, or a colt and sell it as your horse. That is discouraging to a boy and would be very discouraging to a man. There is an innate pride in possession. All of us have it. You are proud of your farm, your stock, and your home; you are proud of your possessions; you would not have us know it, but the pride is there. I remember looking at a drove of cattle as they were driven to the stock yards for shipment. The owner and his son were following them and the boy pointed in pride to one and said, "That is mine." That father had taken the first step toward making a farmer and partner of his son. Oh, the joy and pleasure we take in pointing to our possessions and saying, "They are mine!"

I want to tell how I came to be a partner on the farm. When I was probably seven or eight years of age, father came from the barn one morning with a smile on his face. He had found a pair of twin calves in the stable. And, like Jacob of olden times, when he saw his herd increasing with such rapidity, his heart also expanded with generosity. He told me that I could have one of the next pair of twin calves that came to our farm. I, having nothing to lose and everything to gain, accepted the proposition. About six weeks later another pair of twins materialized and I was a partner and have been to this day. I am a believer in partnerships, when they are formed on the proper basis. Two men can accomplish more together than apart. A father and son forms an ideal partnership. The father with his years of experience and sound judgment acts as a stay and support to the young man's daring and energy, while the son's resources and courage stimulate the father. What more pleasant arrangement can be made than a father and son working together in complete harmony, each paying to the other that tribute of respect which is due.

Agriculture is looked upon as a more honorable and elevating occupation than it was a generation or two ago. It is no more honorable than it ever was, but the public's view-point has changed. Science has placed agriculture side by side with the learned professions. The law, ministry and medicine no longer appeal with the old-time power to the country-bred boys. It has dawned on them that these useful and honorable vocations can give no wider or more beneficent scope to the mental activities of young men with fine minds and large hearts than other occupations of equal importance if less renown. Modern farming, in order to be financially successful, and intellectually satisfying, demands and stimulates the highest degree of brain efficiency. Consequently our country boys are seeking more and more the literary and agricultural colleges, where their bright minds are quickened and trained to grasp the great problems of life and scientific agriculture. Do they return to the farm? Only a small percentage. Many complaints have been registered against the agricultural colleges because they educate the boys away from the farm and offer them tempting and lucrative positions when they have finished their courses. But we must remember that scientific agriculture is yet in its infancy and they are needed as teachers and instructors in other places. Where the demand is there the supply will go, and until that demand is in a measure supplied we need not expect a large percentage of returns from the colleges. Just be patient and the returns will soon be greater. Every new method is accompanied by a sacrifice to some one. You may sacrifice your business plans when your son accepts a position as instructor in a college. Yet you are doing infinitely more for agriculture than if he returned to the farm.

I am always interested in looking over the catalogues of the colleges and noting the occupations of the graduates. My own class of thirty-five has just three scheduled as business men, and two of them are farmers. Higher education does educate the boys away from the farm, but it opens to them occupations that would otherwise be closed and presents positions that seem tempting. Thus the custom has been, and the catalogues of the colleges testify to the fact, that the professions have claimed most of their graduates until they are overcrowded and the young men of necessity turn to other vocations. The outlook for the farm is brighter.

There are many young men who have not the opportunity of forming partnerships with their fathers or of taking an advanced course of training. These form that great class of good, intelligent, and industrious farmers who follow the tried methods of farming. With agricultural literature as abundant as it is today there is no reason why any man should go begging for information, if he has the inclination for it. Perhaps the greatest advantage we can claim for advanced training is that it creates the capacity and stimulates the desire for information. With the capacity for, and the desire to obtain, knowledge, the individual will advance rapidly in mental culture. To the young farmers who have not had the training which they desire, I would suggest that they become students at home. There is plenty of time and ample means to do this, and the reward will be greater mental activity which will be a source of much pleasure and a valuable help. Brain power is something of which men may well be proud as it is not acquired in one year or in ten, but a whole lifetime is required for the mind to reach its fullest development and farm life presents as many opportunities for mental growth as any other occupation.

To the fathers I would say teach your boys to be observing, persevering, and industrious. Teach them to relate accurately what they have seen and heard. Encourage the natural tendencies which they possess for any special line of work. Do not overcrowd their willingness. Lead gently rather than force.

To the young man I would say, choose the occupation for which you have some liking lest you become a misfit. Be a student of nature and men, and avail yourself of all the advantages both for social and intellectual improvement which come your way. For young men with such qualifications the demand will ever exceed the supply. Your "lines have fallen in pleasant places"; your occupation is as honorable and as elevating as any man's. You have opportunities for mental and social improvement of which your city brothers do not know. Rub off the rough corners and brighten the rusty spots of your nature and you will develop into a man of whom your community will be proud. The agricultural people will do well to give their positions of honor and trust to such men as have been described, and they will secure good legislation from them.

OUR FARMERS' GIRLS.

BY MARY E. SMITH, CHESTERHILL, OHIO.

[Read at the Farmers' Institute held at Chesterhill, Morgan County, February 10 and 11, 1905.]

The subject assigned me is given in the programme, as "Our Farmers' Girls." I had understood a member of the committee to say, "Our Country Girls," and I found myself wishing to change it just a little, making it read, "Our Country's Girls;" thus including all there is of American girldom, feeling perhaps that the larger the subject, the better would my chances be for touching it somewhere.

Afterthought convinced me that so far as size was concerned the former subject was quite large enough for me, even though I may not stick very closely to it.

After all, are not farmers' daughters built of the same material as their city cousins? The chief differences lie in education and environment, not in the girls themselves. Human nature must be much the same the world over. We find in some homes persons of ordinary mental ability and fair education, but apparently wanting in that inner natural refinement for which no amount of outer polish can compensate. This is true of town and city, as well as of country people.

The average farmer's daughter does not possess the easy self poise of the city-bred girl of wealth, or even of moderate means. She would not know how to conduct herself if suddenly ushered into a crowded ballroom; neither is she familiar with all the intricacies of a ten course dinner. She cannot talk fluently of the opera, nor tell all about the latest theatrical star. All this and much more she usually misses, but there are some compensations. While she may not be permitted to attend that course of lectures she so much longs to hear, she may be able to read some of them, study them, and finally comprehend them quite as well as if present when they were delivered, the personality of the speaker only being lost.

As to the material side of life, any one competent to judge will readily admit that the family of a prosperous farmer live as well, or at least, *may* live as well as any one ought to care to live. There is work, hard work, and plenty of it, on a farm; but so there is in almost any thing else worth doing.

If a girl has her own living to earn she may do far better by going to a city if well prepared for some special work, otherwise she will stand a much greater chance of starving there than in the country. A young widow living in a city, and trying to support herself and child by keeping boarders recently said to me, "I sometimes think country people do not know how near to Heaven they really are." Doubtless this is largely true, as we are so often reminded that our blessings are most appreciated after we have lost them.

Would I have all farmers' daughters remain on the farms from youth to old age? By no means. We may certainly hope that some of the more capable ones will stay, else what is to become of our farming communities in a few generations? Most of the farmers' wives of today were farmers' daughters in the past, the same must be expected in the future. However, many country girls want to try something else, to be independent; are ambitous, maybe, for a college education, or to fit themselves for a profession. If their parents are poor how are they to get the money? True, a good girl can almost always find a position to assist in doing housework, which is a perfectly honorable but not very speedy way of reaching the desired goal. Or, if well grounded in the common branches she may be able to get a start by teaching. If not, what next? Each should decide this question individually. The more easily discouraged will perhaps give up the struggle after a while, and then possibly marry the first man who offers a home, without much regard to connubial fitness. But the girl of true grit is not to be so easily driven from the field; if one way does not open she searches out another, and yet another and finally makes at least a partial success. Few there be of either sex who find all the dreams of life come true. If later on she gives up her chosen work and joins hands with another to build a home, her early struggles should render her, not more aggressive, but more helpful, more womanly.

But to go back to the time when the little girl is just learning to be helpful about home. She should early be taught to wait upon herself, and to be thoughtful of the comfort of others, especially her parents and other members of the family, never forgetting the consideration due to aged persons. Besides all this she should have regular work to do, not so much as to be a burden, but enough to cause some small sense of responsibility. Where there are several sisters in the family, instead of allowing some to shirk while others toil the judicious mother will so arrange and plan, that each child will in turn learn to do each kind of housework and to do it at the appointed time, knowing that she will certainly be called to account for any neglect thereof. This will often be harder for the mother, in the beginning, than to do the work herself, but will pay in the end. By the time the girls have completed the course of studies afforded by a good district school, they ought also to be pretty well grounded in the elements of housekeeping and this without interfering seriously with their studies. One cannot study all the time without endangering both health and eyesight. I have heard mothers say that their children could not help much and keep up with their classes, but these same girls could find time for parties and many other things. Strange, was it not?

No true hearted girl can see her mother overburdened with care, while she takes life easy, doing only such things as please her fancy. Instead she will try to lighten the load, and become not only an efficient helper, but a companion as well. Some girls are helpful and pleasant enough away from home. but of little account at home. Surely there is something wrong here, a want of sympathy between mother and daughter to say the least. Parents and children ought to be good chums without lessening the respect of the child for the parents' authority.

I once heard a group of girls talking of their separation and return home at the close of a term of school, when one lively girl exclaimed, "Why, I have mother, and she is better than any girl."

While your daughters are making themselves helpful at home they must have clothing, books, etc. Why not give them a chance to earn a part of the money, thus teaching a few simple lessons in self-reliance and also in the elements of business? Every girl should learn the judicious use of money, and how can she if she never has any to use? Money simply hoarded with no end in view may do your child more harm than good. On the other hand, if not carefully guided at first, the little folks are apt to spend their pennies for frail toys, or unwholesome candies. Teach them to save their small earnings toward paying for a needed garment, or book, a valuable toy, or occasionally a treat of something really good, to be shared with others. It is an open question whether or not it is a good plan to pay children for work done at home, lest by so doing they learn to expect pay for all that they do. The dreaded task of washing the dishes might be less irksome, if a small sum were paid weekly, whenever the work had been cheerfully and faithfully done for that length of time. Your little girls' new shoes and dresses need not cost a penny more because they earned the money helping you. It will depend on the disposition of your children and on your own skill in managing them whether or not it is a wise thing to do. If they are inclined to be a little selfish do not foster the habit. A man once said to me that his two little boys had reached a point where they would scarcely help their mother at all, because their grandfather had paid them for lttle things they did for him until they had learned to expect pay. As I said, they were boys, but girls might be as easily spoiled.

Another plan not open to this objection, is the individual garden plot. A small space can be fenced in and divided amongst the children, each caring for one portion, with some assistance and supervision from the parents. A small child cannot prepare the soil, but can help do it, and can weed and hoe later on, thus learning lessons in gardening while earning a little money from the sale of vegetables, berries, etc. Each child might also be assisted in planting a few fruit trees in out of the way places, early maturing varieties of peaches, plums, etc. The care of these trees would be practical lessons in horticulture; each one to gather and dispose of its own fruit, using or selling as it may prefer.

Of course you keep chickens on your farms. Who takes care of them? "Oh, just as it happens, the children and their mother mostly. Our hens are not of much account, do not lay enough to pay for their feed any way." Now, it is just possible that if you would gather up some of those loose boards and use them in making your poultry house warm and dry, then take your daughters into partnership, your hens might change their habits a little.

Girls, do you help about the milking? Of course it is not exactly a woman's work, but is no harder to learn, nor to do, I fancy, than croquet, tennis or basket ball. Not so much fun to be sure, to put on your old dress and go out to milk, as it is to play a game with some jolly companions. But when your father comes home tired just at dusk he will be pleased to find it all done. Surely, you wouldn't think of letting mother do it while you play. If you have big brothers let them do it the most of the time anyway, save your skill for emergencies.

If it is true that history repeats itself, our country must continue to look to the farms for many of its leading men and women. Not because of the superior intellect of farmers; we are not so foolishly vain as to claim that; and we know full well that there are many country people who have little or no ambition to live up to the limit of their natural resources, but just ask the instructors in your village high schools where their best workers come from; continue your investigations by writing to the presidents of several colleges asking the same question, see if they do not tell you that many of their best students have come from country homes, and received their early education in country schools. If you care to ask these energetic young people what brought them to college, the answers will be various, but some of them will certainly disclose the fact that their mothers' efforts went a long way toward placing them there.

Napoleon is quoted as saying that what the world most needed was mothers. It is just as true today. Not mothers whose sole ambiton is to train up warriors and statesmen; but mothers who can and will teach lessons of honor, of self-reliance, of true manhood and true womanhood. Mothers who will so train their children that they will shun a falsehood as if it were a loathsome disease, an act of immorality as if it were a deadly serpent.

This cannot be done by sending the children to Sunday school once a week, and letting them run the rest of the time. It needs daily, yes, hourly, care and labor; so that when the mother and children are separated (as must needs be during school hours, at least) her influence goes with them.

We read of Nature's noblemen, but what of her noblewomen, are they less in evidence than the former? I trust the race will never become extinct.

Nancy Lincoln occupied a very humble position in the world, but what an immense power she wielded through her illustrious son, who never forgot the homage due to his own sainted mother, and his highly honored step-mother. The father seems to have been only a commonplace man, but these two noble women deserve a nation's lasting gratitude.

I am well aware that much of this is not strictly a talk on farmers' girls, but one more instance and I am done. A few years since I overheard one mother ask another to join a temperance club; the second (a busy farmer's wife), while she said not a word against the cause, simply replied, "I think I shall stay at home and look after the boys I have." Was she not right? She gave them of the best she had, a mother's loving counsel and companionship. She has since "gone home," but her sons have her memory and if they now seek out evil companions it will not be through her influence.

TRAINING OF THE CHILD IN THE HOME.

BY RINE SCHOFIELD, CHESTERHILL, OHIO.

[Read at the Farmers' Institute held at Chesterhill, Morgan County, February 10 and 11, 1905.]

I feel my utter inability to handle my subject as it should be handled, knowing as I do, so many among my audience who are much more capable in practical experience, at least, of discussing the subject. I can advance my ideal theory, however, and you may take it for what it is worth, and to the cynic, if such there be here, who will say when I am through, "Why does she not train her own children so?" I will say there are two slight obstacles in the way of this ideal training. One is that I am not quite an ideal mother, and the other that my boys are not quite ideal boys. Two imperfect halves cannot make a perfect whole.

The question is frequently asked, when should the training of the child begin. An eminent divine being asked this question, replied, "Begin with the child's grandmother," thus implying his belief that heredity and prenatal influence are of more importance in the formation of character than environment. Which of these is the most important forms a subject within itself and as almost every one has his own opinion, I shall let it pass without comment.

In the care and training of children there can be no cut and dried rules. In the thousands of homes where conscientious parents are striving to train the rising generation into noble men and women, there are no two who employ the same method, in fact, there are scarcely two children in the same family who can be treated in just the same way. It is almost like the "World of Chance" in the old reader, "What is one man's meat is another man's poison." The mother needs to study the disposition of her children and govern herself and them accordingly.

The training of a child in babyhood is so nearly a mechanical operation that little need be said. A baby is so much a creature of habit that if a healthy one is warmly and properly clothed and properly fed, it needs but little else. The let-the-baby-alone theory is one of my hobbies and when I see the poor little tender things handled and trotted and tossed until every bone and muscle must cry out for mercy, I wish some big ogre would come along and seize the baby's tormentor and treat her in the same way and when she at last drops asleep from fatigue, screw a corner of a handkerchief up her nose or into her ear or arrange her dress differently, etc. How long and soundly would she sleep, think you?

As to the time and manner of feeding the baby, every intelligent mother must be her own judge, always remembering that the stomach needs rest just as the other organs do and that it does not hurt a child to become healthily hungry. That is nature's demand for food and it should be complied with as soon as possible.

Much may be done the first year in forming habits of eating and sleeping, but after that comes the real tug of war. The will power begins to assert itself and the real training of the child begins, and happy is the mother who can be gentle, loving and patient, but firm and steadfast for the right. The little ones are imitators by nature and our every word, look, and tone are watched by innocent wondering eyes. We must try to bend and direct this will power, not break it, or we shall have only a lazy drone in the busy hive.

As to the manner of disciplining a child, a mother must be governed by the circumstances and the disposition of the child. What seems a severe punishment to one will have not the slightest effect on another. Some children are so sensitive that a look or a word of reproach will make them almost heartbroken, while others must be dealt with more vigorously. Praise is a great incentive to most children, but must be used very judiciously so as not to arouse the self-conceit which exists in every child. On the other hand, I believe many a little heart hungers in vain for praise justly due it for some sacrifice made for father or mother. Corporal punishment should be a last resort and should be the exception, rather than the rule. It may be used as a deterrent sometimes, but never as an incentive to work or study. Never give a child a poem or a chapter in the Bible to commit as a punishment. It will only end in his dislike to the chapter learned. As nearly as possible let punishment be that which must follow as a natural result of misconduct and be careful about giving commands; requests are much more readily obeyed. Do not forget to say "please" and "thank you," if you expect your children to say them. Politeness is learned more by practice and imitation than by preaching.

The mother should be interested in the little ones' sports and try to keep in touch with them as they grow older that they may think of her as a friend and not as a strict mentor. Let her take the chidlren among birds and flowers and teach them to love them. Short poems are interesting to most children and it is wonderful at how young an age they appear to catch the meaning.

I do not think it advisable to give lessons in books or in regular way until the child is at least six years old. There is so much of interest to be learned outside of books that the little, nervous bodies and busy brains are kept continually at work without bringing in that which can be done better later on.

A child can very early be taught to attend to his own little wants and thus not only help to pass the time for himself but also relieve the weary mother. Teach him self-reliance and independence and you will smooth his path in life for him.

The principles of Pestalozzi might be a help to the mother as well as to the kindergarten or primary teacher. He says: "Activity is a law of childhood. Accustom the child to do. Educate the hand." And again, "Begin with the senses and never tell a child what he can discover for himself." Throughout his "nine principles" we may find food for thought and rules for guidance.

We parents have need to be very charitable to the shortcomings of other people's children because our own may have less venial faults which we entirely overlook.

The twentieth century appears to be emphatically the children's century. They no longer remain in the background, while their elders discuss matters of interest, but are ready with their own opinions which they present oftentimes without regard to time and place. Whether this pushing of the child to the fore is an improvement remains to be seen. Will it make them nobler and broader-minded or develop them into premature, self-conceited men and women?

A child should be taught not to be wasteful of food and to eat that which is set before him. The habit of eating between meals is a useless one, except with very small children who cannot wait for mealtime, but they should have something at regular intervals between meals. If luncheons must be given, let them be something plain, apples or bread and butter. Meat and vegetables should be fed sparingly until a child is three or four years old. Graham bread, whole wheat bread, butter, milk, fruit and well-cooked cereals should form the main diet. By well-cooked I mean just what I say. Oatmeal or rolled oats that have been cooked for fifteen or twenty minutes are very indigestible and should not be eaten by children. Cooked four or five hours in a double boiler they become a very nutritious food. Rice properly cooked is excellent also. But in diet as in discipline the mother must be governed by common sense. One child may rarely eat enough of anything to hurt him, while another must be watched continually. A child's liking for candy is nature's demand for sweets and should be indulged judiciously.

Children should have plenty of fresh air and sunlight. They cannot live and thrive in darkness and impure air any more than a plant can. They should have daily outings unless the weather is entirely too stormy. Do not be afraid to open windows and doors and admit the pure air of Heaven.

In the mental and moral powers, children differ as much as in physical powers, and there are as many methods of developing them. A healthy child is sure to grow in some direction either right or wrong. In moral development I believe they depend more on example than precept. Parents may preach till doomsday without benefit to the child if their example is not in accordance with their preaching. In the development of the mental powers, after the activity of the mind begins, the thing is to keep it directed in the proper channels and to avoid over-stimulation. The child is of such a delicate mechanism that it needs be dealt with very carefully. As I said before but little from books should be taught under six years of age. They need the first six years to lay up a supply of health with which to meet the coming years of study. They will soon make up the apparent loss of time when they do begin book studies. We, as parents, should be able to teach them to see

"Sermons in stones,
Books in running brooks,
And good in every thing."

Let us try to fill their little innocent minds so full of love for every living thing that there will be no room for cruelty, malice or spite. Let us be careful not to injure any thing in their presence as most children have some savagery in their nature which is easily developed.

As the child grows older, the parents' repsonsibility increases. After he reaches school age, he loses his simple babyhood, and takes up his battle with the world. He must learn to adapt himself to circumstances and oftentimes receives hard knocks in doing so. And happy is the mother who can be loving and sympathetic but impartial in her estimate of things. She must remember a child's view of things is likely to be distorted and hear both sides of a grievance before pronouncing judgment.

Give the children plenty of pleasure but also some daily task to perform. Enter into their sports and studies with them and teach them to think of father and mother as pleasant companions and of home as the most delightful spot on earth. Cultivate the habit of not seeing every little misdemeanor and try not to say "Don't" with every breath.

Teach them to read good books—biography, travel, history, and poetry—and so fill their minds with good that there will be no room for evil.

Study a child's inclination and do not try to make a lawyer or a minister of him if he loves plants and animals better than books. "Do not spoil a good farmer to make a poor preacher."

Teach them, if you can, to shun evil because it is evil and not from fear of punishment. The responsibility of parents is great and yet in the end much must depend on the child himself. The time will come when he must meet evil face to face and decide his course for himself. If he has been taught self-reliance and control he will probably come out victorious, but alas! how many failures we see around us. We can only humbly and prayerfully strive to do the best we may and leave the rest unto a Higher Power, trusting to Him to direct our childrens' pathway toward nobleness.

PRUNING AND GRAFTING.

BY CYNTHIA PECK EMERY, NAPOLEON, OHIO.

[Read at the Farmers' Institute held at Grelton, Henry County, February 22 and 23, 1905.]

Pruning and grafting may by right be considered as much the privilege of the good housewife as of the horticulturist. Webster says "to prune is to cut off." The boy's definition for pruning was "taking off what was unnecessary;" when asked for a definition he said, "In warm weather I prune my coat," and for our purpose the boy's definition is quite satisfactory. We would say to the good housewife, "Come, let us reason together for a little and see if in our busy work-a-day life we may not be able to do some little pruning by cutting off some things that may be considered, if not entirely unnecessary, of no primary importance."

The horticulturist in order to do any pruning must have the tree or shrub on which to work; the pruning hook, knife and shears with which to do the work, and in order to succeed must have some confidence in his ability and must know when and where the work should be done.

Now, to the average farmer's wife her work seems to have been handed down from time immemorial and seems to be "to make and to mend, to bake and to brew." Then as housework seems to be one tree we endeavor to prune, let us take as one chief instrument in our work—system. In the average home there are just about so may things to do, and usually but one pair of hands to do them. To do the most business with the least friction is one of the necessities. No business succeeds without some system. What school would be a success if allowed to continue with no system. How long could the government of any nation exist if no system of order was at its foundation. Or take, for instance, the war ships on our seas and oceans; what disastrous results would follow any advance made by them on an enemy if there was no one to command and a system of tactics. And system is just as essential on the farm or in the farmer's home. It is not the wise man that fills every hour with the known business, but he who leaves some margin for what may come aside from what is known to him.

So the busy housewife should not plan work for every hour but leave some margin for interrupted work—often there will come whole days when there is no time for anything but the unexpected work. Such days call for patience, and patience must be learned and lived and nowhere is it more essential than in the home. Scarcely a day passes that does not call for self-control. At such times it may help to remember Milton's words, "They also serve who only stand and wait." The act of standing dissipates any idea of listlessness while waiting and shows a readiness for action.

I remember once hearing an old lady say that if you would make it a habit never to lay a thing down till it was in its proper place, a lot of time would be saved as well as a vast amount of worry. Now, as worry is one of the things we would like pruned out of our busy lives, this simple bit of advice is well worth accepting. See that a thing is in its proper place when it leaves your hand.

Worrying is one thing that is not even a necessity and still it may be hard to prune out. We may have some special object in view and worry for fear we may not see the consummation of our hopes. Instead of worrying how much better it would be if we could feel with Stevenson in his child's poem where the little child was casting his little leaf boats adrift on the bosom of the stream and says:

"Away down the river a hundred miles or more,
Other little children will bring my boats ashore."

so we too may rest assured if we do our best someone, it may be away down the stream of time, but someone will bring our boats ashore. So let us quit worrying. How glad we are that there are among us:

"Those who carry music in their heart,
Through dusky lane or crowded mart,
Plying their daily tasks with busier feet,
Because their secret souls a holier strain repeat."

In the typical New England home each pan is scrubbed as though it were a sin for tin not to shine. Saying nothing against this, spending so much time polishing kitchen utensils leaves less time for polishing the mind. which is of much greater importance.

Under some such mistaken sense of duty many a busy wife and mother, whose brain is bright and active, spends more time polishing things which are only temporary, leaving less time for the care of her mind, and in consequence the time soon comes when she fails to be a companion for that much loved son or daughter. In direct opposition of this, one busy mother I know studied at home to keep pace with her child away at school, while another, just as busy, has taken up the study of music to be more in sympathy with a loved son.

In order to do any grafting we must be willing to prune and so have space for the new shoot; or, in other words, we must be willing to do less in one direction in order to do more in some other.

We have all heard from our parents or grandparents stories of how much more simply our forefathers lived than we now do, and of how much more simply they were clothed, and a noted lecturer now is trying to tell us how to live the simple life, or how to live life more simply. One of his ideas in particular is the privilege of each one to live his own life in accord with his own circumstances, which seems to me may be construed into "do not feel compelled to do a thing simply because your next door neighbor does it."

If we would have time to graft something into our lives which is not already there, why not make our housework more simple, cull out some things we do not really need to do, for example, do less pie and cake baking, using fruit more, take less time for the ironing, fold some of the clean clothes as they come from the line, and see if the precious home folk will not vote for a few more wrinkles in the clean clothes and a few less in the face of the homekeeper.

The lot of the average farmer's wife is without question a very busy one, but after all may she not be envied by her sisters? I sometimes wonder if the wife of a great business man is ever a really happy one. A man wins tremendous success in business only by making it the one great passion of his life, and his wife must have only secondary place, while on the farm the interest of the farmer and the farmer's wife are one.

Another tree the busy mother may be called upon to prune may be the mind of the children of her home, and I think all will agree with me that to the mother is intrusted a great measure of the training of this, the tenderest product of the home. Nothing else holds so large a possibility for weal or woe, and they are bound to be a determined factor in the home and community. How then best to prune or graft is the question.

A story is told of an old lady's advice to two anxious mothers—one, the mother of the bad little girl who was always torn in temper as well as raiment, and the other the mother of the docile, obedient little girl whose face and disposition were always serene. To the mother of the tempestuous little girl she suggests pruning, saying, "Can you not see that all this aggressiveness is only too much leaf? It may mean leadership some day, but needs pruning now, and your little girl who gets so angry must be taught self-control. You must have the seeing eye, the understanding heart, as only the seeing eye and the understanding heart will be able to see beyond all this turbulence and know when, where and how to prune." But to the mother of the good little girl she gave the impression that her work was even harder than that of pruning, for she must graft. To this mother she said, "You are content now because your child is so gentle and easy to manage. It is comfortable no doubt, but where is the promise of mature power? You must graft responsibility and active generosity. You cannot change her sweet nature, and would not if you could, but think of the many ways in which it can be enriched."

One object then in training children should be to better fit them for life. One great recourse of safety will be to early place at their command good reading, good books. From this companionship will come good thoughts, which must give good character.

Pruning and grafting! Pruning and grafting! Mine, you say, are only theories. My theories, then, I leave with you.

RURAL OBSERVATIONS IN NORWAY, SWEDEN AND RUSSIA.

BY MRS. ELLEN M. HEALEY, GREENWICH, OHIO.

[Read at the Farmers' Institute held at Greenwich, Huron County, January 20 and 21, 1905.]

I shall try in this paper to tell without referring to history some things as I saw them. The first month of our journey was spent mostly on the water, on no less than ten steamers. After landing in Liverpool we went to Newcastle, England, by way of York and Durham, stopping and visiting the points of interest in these two cathedral towns. We sailed from Newcastle for Bergen, Norway. All expected to be seasick from the reports received of the North Sea, but it was smooth this time.

Our first sight of Norway was of the barren hills of the west coast; as we came nearer and entered the fjords we could see green slopes, snow capped mountains, rapid streams falling in cascades down the mountains from the melting snow. Even this did not prepare us for the natural beauty around Bergen, one of the oldest and most picturesque towns in Norway. It has seventy-two thousand six hundred inhabitants. Many of the buildings have red tiled roofs. The older houses are timber built and usually painted white; the queer and gay costumes, light-hearted and happy people made the streets a highly colored picture. The general appearance of the town was modern, wide streets at right angles, designed chiefly to prevent the spreading of fire. The old Hanseatic quarters were full of interest, and the odors would make a good housekeeper sick. The fish market in Bergen is the largest in Norway, the fish and the costumes of the market men and women made it worth many visits.

Every one was out to enjoy the evening's daylight till 11:00 o'clock p. m. Bands of musicians played every night till midnight, regardless of weather conditions. Bergen has the record of "rain every day." The rain fall there annually is seventy-two inches.

One day we took a trip by steam cars and a long walk. We saw some of the sod roofed houses.

In little patches (you could not call them gardens), they were raising Norway spruce and pine trees, from the seeds, to ship. The trees were not over two inches high.

It was here that I first saw the typical Norway haying. The whole family go to the field with scythes, rakes and poles, the latter to make a pole fence on which to cure the hay. The poles are placed on stakes and are about ten inches apart, As soon as the grass is cut it is strung on these poles. When finished it is five or six feet high and looks like a grass wall. Some cannot afford poles; they make a fiber rope, stringing it between the stakes and using it in the same way as the poles. The poles are carefully cared for from year to year.

From Bergen we went north, mostly among the islands and fjords, making many stops. We saw many humble homes in sheltered places under the hills and mountains; their little fields, not as large as a good-sized church room, made us wonder what they lived on. We saw some fine estates that had had good care for ages; they had numerous buildings, stone spring houses, wharves and warehouses. The fields showed by their color the grains, grass and clover.

I never such large full heads of red clover as I saw in Norway. With a glass we could see the stock grazing and nearly always a woman dressed in black going to or from the spring. She would carry two pails suspended from a yoke on her shoulders. North of the Artic Circle, most of the mountains are picturesque, pointed in shape, often rising immediately from the sea. So far as not covered with snow they are clothed with a green moss. There is no lack of barren rocks. The growth of trees in these northern regions is scanty. There is an abundance of fresh vegetation, owing to the dampness of the summers and the mildness of the winters. Sheep and other animals can remain in the open air all the year round. Churches on the various islands seem to be guides as lighthouses are on our shores.

Tromso is a town of seven thousand, about two hundred and twenty-five miles south of the North Cape. The trees here are mountain ash, wild cherry and birch, which attain a surprising size. Leaves on the same kind of trees here are much larger than farther south. Here we saw, for the first time on this trip Laplanders (after visiting the town and the most northerly museum in the world). We were interested in watching a flirtation between two Lapps. There is a Lapp encampment near Tromso. They own a herd of two thousand or three thousand reindeers, which graze on the hills, and are caught by a lasso thrown over their horns. The reindeers are milked but twice a week, the rich and rather gamy milk, one of the Lapp's chief articles of diet, is diluted with water before using. The milk is strong and thick as if it had been beaten up with eggs.

Through the long day of months the street lamp posts in Tromso are taken down and stored, as they are targets for stones which all small boys like to throw. Since they have an electric plant the long night of months is made into regular day and night of twenty-four hours.

Steaming away on our journey north we passed by the entrance to Altenfjord, which locality is remarkable for its rich vegetation. It is the most northern point on the globe where agriculture is carried on; beautiful foliage trees, and wild strawberries are found here, potatoes flourish too. Altenfjord is where the plot of "Thelma" is laid. At Hammerfest, the most northerly town in the world, vegetation is so scanty that a patch of grass, which might be covered with an ordinary sized newspaper, would be hailed as a meadow. In the windows of homes and shops geraniums, pinks, and roses were in bloom, the latter as beautiful as any I ever saw—not many on the small bush—and we stopped to admire the flowers, and a native woman in the home cut off a beautiful white rose and brought it out, giving it to one in our party. Still seventy-eight miles further on, at the North Cape, many flowers grow. I had a pretty bouquet picked at the North Cape. The charms of the midnight sun as seen from the North Cape have been described in graphic language by authors, poets and orators, but to see it as we did last July makes the description very tame.

We returned eighteen hundred miles south by different fjords and making other stops. You may judge after four weeks on the water we looked forward with delight to starting on nearly a week's drive, on government roads, diagonally across Norway with ponies and stolkjarres, the native cart for two passengers, the driver sitting behind driving, generally with small rope lines. Rope and string form a large part of some of the harnesses. A typical Norway pony is between a cream and sorrel in color, the mane is cut short; in the center it is about five inches long tapering to one and one-half inches at the head and body making a crescent brush, also it makes the arch to the neck seem higher; they have kind faces; are gentle and sure footed; they are treated kindly, not even a harsh word spoken to them. In going up grades the drivers walked. To stop the ponies the driver makes a noise that sounds something like bur-r-r-r-r.

The houses are mostly of hewn logs, with mitered corners, the cracks filled with mud and moss, roofs are, first, birch bark, then turf from five to seven inches thick, from which grow daisies, johnny-jump-ups, clover, grass and sometimes a tree. There was almost always water dripping between the turf and bark.

We ascended over three thousand feet one forenoon and in the mountains saw another feature in haying. Small plateaus well up on the mountains would have grass growing on them. To get the hay down the rough mountain side they had trollies, as they are called, to their barns in the valley. They bundle the hay from these plateaus and attach the bundles to a pulley on the wire, or trolley, and it goes down to the barns. It was a common sight to see these bundles going through the air from different heights to different barns. Another set of trollies from the storing barns down to the warehouses on the wharves deliver the hay ready to ship. This was the system used in all the mountains. I did not see a large meadow in Norway, only here a patch and there a patch.

Just at the edge of the perpetual snows, grows a small plant called "multiberry"; the leaves are between our strawberries and raspberries; the flowers are white, not in clusters. Our driver picked some berries for us, and we found them something like a white raspberry with larger seeds. When in Christiana I had them quite often with sweet cream. All through Norway, yes, and into Russia, berries were served in large soup plates with thick sweet cream from large pitchers, like water pitchers.

The flora of these regions is beautiful and contrasted prettily with the snow; violets are a much darker blue, and forget-me-nots larger than with us.

Through the snowy section at each side of the way, were poles much higher than our telephone poles, to mark the way when the heavy winter snows come.

After we passed over the top of the mountain the descent was full of interest. The road followed the Otto river from its head; the changes are very marked; there are trees all knotted and twisted by the heavy winds, some trees with no limbs at all on the windside. High in the hills and mountains are many "satero" (pastures) where stock are sent for the summer. The cows in Norway are small but can climb the mountain side as well as goats. The vegetation here is so good that they prefer to feed even at the risk of losing some of the stock by rolling stones or avalanches overtaking them. Cattle, sheep, goats and pigs all graze together on the mountain sides. The pigs have long tails curling along their backs and their ears look like large curled wigs.

We often came to places by the stream where there were from seventy-five to one hundred milk cans, such as are used here in shipping milk, also many pails, sometimes a cream house, and sometimes the cans would be by the rocks in the running water; it was all very clean and the tin shone in the sunlight, but never a person about, only sometimes someone watching the herds.

On the east side of the mountains there is less rain and the farms have to be irrigated. Wooden troughs were laid in the fields, the head water coming from the melting snows or a spring. They have a wooden spade, we will call it, the spade part about six inches wide and from eighteen to twenty-four inches long, and with a scoop and swinging motion they take the water from the trough and throw it, first on one side of the trough and then on the other. The strip covered was about thirty feet, the troughs being moved on until all the field is given a shower. The same places are used for the troughs each time.

The families for generations have their buildings all together, the oldest son staying with the father, other houses are added from time to time till the farm houses and buildings look like villages.

Fences are made of limbs or small trees, not over five inches in diameter. Some are made from smaller limbs from two to three inches in diameter, woven together with still smaller limbs. We found the inhabitants very hospitable and civil, with good education and large experiences which were interesting to hear.

Norway has twenty-five thousand seven hundred and fifty English square miles of forests, chiefly pines. The wood is valuable, owing to the closeness of the rings which marks the annual growth. Next to the pine are the oak, birch, elm and beech. Other trees occur but not in forests. Apple, plum and cherries, currants, gooseberries, strawberries, raspberries and bilberries grow in Norway. Wheat, rye, barley and oats are the grains. The cultivated land in Norway occupies only ten hundred and seventy-four English square miles. A kind of sorrel is largely cultivated as a substitute for corn; it is kept in a frozen condition in winter and boiled down to a pulp for use, being frequently mixed with flour and made into "flat brod." In the southern part of the country the "flat brod" is usually made of wheat or barley flour mixed with mashed potatoes.

Soon after entering Sweden we went through a fine valley. The farms and country looked very different from any we had seen. My first impression was that the stock was highly educated, as the fields of grain, clover, etc., were not separated from the pastures. There were no fences. The cows were lying down, all the same distance apart and just the same distance from the grain field. A man had entered the field with horses and a tank wagon with a trough across the back end; he drove along and stopped by the first cow; as he drove on the second cow arose and was ready for her morning drink as soon as the wagon reached her, and so on, no time being lost. A few days later, by nearer observation I learned that all stock was staked with ropes or chains and could go no further, then I comprehended that the stock had not been so highly educated, but whatever education they had was a case of compulsory education.

From the canal we could see many beautiful farms. Every farm and small place has its peat field. We saw it in a few blocks, in large piles, and in ship loads being put into the drying house to be made ready for fuel, for large shops building machinery and engines.

For rest, pleasure and interest I would suggest the Gotha canal trip across Sweden to Stockholm.

From Stockohlm we went across the Baltic Sea, up the Gulf of Finland to St. Petersburg, in Russia.

Soon after we were located in St. Petersburg, three of us (all women) went out alone to see what we could find of interest. The first to attract attention was the cab, or drosky, a kind of diminutive victoria, hung very low, by far the easiest to ride in of any vehicle we found on the trip. The shafts are held together by a heavy wooden arch passing over the horse's head. The driver wears a sort of dark blue dressing gown with a bright belt; his hat recalls the old-fashioned beaver. The cab horses are usually sturdy little creatures of the Finnish breed, while horses driven in private carriages are Bessarabian, large magnificent animals. It is a fine sight to see them racing along with their dashing gait, their long tails floating in the wind. The cabmen drive without whips, using the ends of the reins instead, which are finished with a tassel of ribbons. In driving single or double they have two reins to each horse.

The variety of costumes seen on the street surpassed anything we had seen in coloring and number. The women are very small. We went to Nevski Prospect, one of the finest streets in the world, where the street life of the city is better seen than anywhere else. It is very wide and extends in a straight line for three miles. We were impressed with the number of men and boys on the street among the pedestrians. Girls are seldom seen on the streets and women never, unless they have something to do.

We were busy watching the driving, looking in shop windows, etc. We ventured shopping to the extent of a few postal cards, some Russian candy and some strawberries. We crossed the Nevski, which we deemed quite a feat. The government looks out for and protects the driver, but pedestrians must look out for themselves and if hurt or even killed they are fined heavily. The horses are driven violently and they turn to the left instead of to the right in meeting which made it all the more confusing for us.

We went into a park, enjoyed the berries and the sight of the people, crossed the street again and back to the hotel safely.

All houses here are built with double windows. Some houses are large, you may imagine, as one hundred and twenty servants are not thought superfluous.

From St. Petersburg we went by the express train to Moscow. The country was different and was merged in a vast prairie ere we reached Moscow. Moscow is the city of interest. Our time was well used here. The driving was not as pleasant, for many of the streets were cobble stones, making it rough and noisy. I will only tell of one building in this vast city of interest, that is the riding school of Moscow. It is celebrated as being the "largest room in the world whose roof is unsupported by pillars or props." It is said that "two regiments of cavalry can go through their drills, maneuvers and evolutions at the same time in this room." All we saw of the war was at Cronstadt. The Baltic fleet lay in the harbor manned and ready to start for the seat of war at any moment, troops were mobilizing in St. Petersburg and leaving every midnight.

From Moscow to Warsaw was nearly nine hundred miles through an agricultural country, with villages built to lodge the farm laborers, and with forests that cover more land than is contained in the cultivated area. We had not seen such vast fields of grain and stubble (it was late in the harvest season). The Holland windmill is used to aid in irrigation. We passed through the best part of agricultural Poland and saw peasants at work in the field. The number of women at work seemed large. While the peasants' houses are as small as those in Russia, here there is more cheerfulness, the gay colors and variety of the Polish peasant women's costumes adds to this. Coming direct from Russia we were impressed by the fine looking Polish people. Warsaw is the great industrial heart of Poland. By reason of their greater intelligence the Polish factory workers can outstrip those of Moscow and St. Petersburg. Poland is one of the fairest provinces of the empire, and in wealth, culture and enterprise far surpasses Russia proper. Rye is the largest cereal crop, being the chief breadstuff of the country.

In good seasons Russia exports about one hundred million bushels of wheat, supplying three-fourths of the export crop to Europe. The other important agricultural products are flax and hemp, tobacco, potatoes and beet root. The beet industry supplies the entire sugar demand of the empire and furnishes enormous amounts for exports to all countries bordering on the Black Sea. Under a minister of instruction much attention is being given to public schools. The present aim is to provide the country with a sufficient number of rural schools for all. No compulsory laws are needed to force the children to attend school.

On our way home we visited Austria, Bohemia, Germany, Holland and England. Each country, like the others mentioned, has its own peculiarities, in climate, beauties, customs, advantages, and disadvantages. Where do we find everything perfect or all the best surroundings to carry on agricultural pursuits? Considering all things, I think our own country, our own state, our own section, has more advantages and less to contend with than any other country of which I know.

DO WE APPRECIATE THE AGE IN WHICH WE LIVE?

BY MISS DAISY MOREY, PERKINS, OHIO.

[Read at the Farmers' Institute held at Castalia, Erie County, January 16 and 17, 1905.]

In the early days of our country's history, when the persecuted and down-trodden from every nation and every clime came rushing to the unsettled shores of our now glorious union, so long ago as when the sound of the Indians' war whoop and the howling of the wolves were heard at every cabin door from the rocky coasts of Maine to the fertile valleys of California, yes, even then the word America stood for opportunity. Every hope, every ambition, every cherished thought that had swayed the minds and hearts of men for centuries was to be realized in the one word, America.

Little did the early settlers think three hundred years ago when they were laying in blood the foundation of a country destined by Almighty God to be the mightiest one on earth that in the genrations to come opportunity would still be the watchword that should lead millions to its shores.

When Columbus braved the dangers of an unknown sea he did far more than discover a new world; he paved the way to freedom; he left the world a heritage as enduring as the ocean that he crossed. For years and years the Puritans longed for a home where they might have religious freedom; the same longing fired the enthusiasm of the Pennsylvania Quakers, and of the Maryland Catholics; a desire for riches brought over the settlers of Virginia; a desire to find a land where the poor are not persecuted for their debts brought to Georgia the followers of Oglethorpe. Some came to find a home where they might worship God according to the dictates of their own conscience; some came to get rich; others came merely for the love of adventure, but all came to realize their ambitions, to broaden their lives, to found homes for themselves and their posterity in a land destined to become a leader among the nations, the fairest of countries under God's blue dome.

As we look about us and think of the wonderful inventions made during modern times and as we marvel at the rapid march of civilization, we cannot help but take a backward look to compare the present with the past, to contrast as it were, the lives we lead today surrounded by all the blessings of man's ingenuity and skill with the lives of our ancestors a half century ago.

Very truthfully has it been written by a recent writer that "nothing in this world worth having is won for the asking; and the best is fought for, and bled for, and died for."

Now the question to which I would call your attention today is: Do we appreciate these blessings of life and liberty for which our ancestors fought, and bled, and died? Or do we simply take it for granted that this age is the grandest in the world's history without stopping to realize how much of sacrifice and privation these blessings cost? Are we utilizing our advantages and opportunities to self-improvement and are we being benefited by them to the best of our ability?

One of the poets has beautifully said:

"Heaven is not reached by a single bound,
But we build the ladder by which we rise
From the lowly earth to the vaulted skies,
Mounting its summit round by round."

The founders of this nation did not build it in a day, nor in a year, nor in many years; the pilgrim fathers, the quakers, the cavaliers, and the thousands of earnest, conscientious pioneers who followed did not by the privations and sacrifices of a few generations give to the world America. Slowly, but surely, step by step, has civilization been marching on until the twentieth century has been brought to behold with admiration the crowning events which are transforming this world.

And now let us compare for a while the present age, the one in which we live, with the age just passed, and then let us decide if we really appreciate our wonderful advantages. It has been the rare good fortune of the majority of those in this audience to have been born and raised in the country. It is here in the country, perhaps, more than any other place, where some of the best opportunities are afforded us to study progression in many different lines. So allow me for a few moments to draw you two pictures. The first is the farm home of an early pioneer, the second, that of his grandchild in the year 1905.

The pioneer's home is undoubtedly a house of logs. By much hard labor on the part of father and sons it has been made warm enough to live in. On entering its door the first thing that attracts our attention is the famous old fireplace which is used not only as a means of heating the house, but in it most of the cooking is accomplished. Would it not seem strange if the housewife of today were compelled to do her cooking in a fireplace and her baking in a brick oven instead of having the elegant steel range to be seen in nearly every farmer's home?

As we go through the house from room to room how few things of comfort we find. In fact comfort to the pioneer is a secondary consideration, for there is always so much work to be done. Work, work, everywhere—no time for idle hands in that household. In the corner opposite the window stands the spinning wheel and from early dawn till set of sun can its music be heard. And then there is the knitting. Is it possible for us to picture that old-time grandmother in her easy chair without her having her knitting work near by?

In that home so long ago we find few kinds of machinery to lighten labor; everything accomplished by hand. No sewing machines to help the mother in making the clothes for the entire family. How few ornaments we find in those rooms. No pretty pictures adorn the walls, and musical instruments such as are so common today were things then unheard of. No beautiful books and attractive magazines were then found on the sitting room table. In fact there was very little beauty anywhere, for beauty fifty years ago was an expensive luxury only to be afforded by the rich.

Perhaps next to the usefulness of the spinning wheel, or equal to it, was the gun with its shot pouch and powder flask which was always kept hanging over the fireplace. On arising in the morning how cautiously the early settler would take down his gun and then quietly creep to the door to see if skulking about was a deer, a bear, a wolf, or a fox. I might go on and on indefinitely recalling to our minds the things of interest to be found in that early home, but we will leave the house for a moment to take a glimpse at the farm.

Out upon the farm even more than in the house the lack of labor saving machinery is very noticeable. No self-binder assists the farmer to cut the grain that he planted by hand. When once the grain is harvested you all know perfectly well what it meant to thresh it with the flail, or with horse power.

And yet, with all their inconveniences, with all their hardships, and all their trials, how happy and contented were our ancestors. With what pleasure we love to meditate on those by-gone days, and how we still honor the memory of those poor but love-blessed homes. Oh, my friends, when we ponder the memory of our grandparents' home instinctively there come to our minds the words of that beautiful old song:

"How dear to my heart are the scenes of my childhood
When fond recollection presents them to view;
The orchard, the meadow, the deep-tangled wild-wood,
And every loved spot which my infancy knew.
The wide spreading pond, and the mill that stood by it,
The bridge and the rock, where the cataract fell;
The cot of my father, the dairy house nigh it,
And e'en the rude bucket that hung in the well:
The old oaken bucket, the iron-bound bucket,
The moss covered bucket, that hung in the well."

If we honor the memory of our ancestors for the patience they displayed in the performance of their daily labors, we reverence them still more when in the evening those dear old people, surrounded by their children, would gather with common consent to return thanks to their God for His blessings.

And now in contrast to the pioneer's home is the average country home of the year 1905. Is it necessary to draw for you the picture of what is so familiar to us all? No longer is the farmer's life one of poverty and privation. Beauty and comfort surround him everywhere. Music and books and works of art are now to be found in nearly every well-to-do farmer's home. If there is any place where the influence of improved machinery, modern conveniences, and recent inventions is felt more than in any other place, it seems to me that it is in the country.

So well distributed throughout the country are the electric street car lines, the telephone, and the free rural mail delivery, all of which are of recent growth, that we farmers do not live in the country any more, that is, the country as it used to be.

By means of the various street car systems education is brought almost to our very doors. When we consider how the pioneers' children had to walk perhaps miles through drifted snow, and brave the dangers of the forests, it is little wonder that their education was neglected, but for us of this age there is no excuse for neglecting education, and the question in my mind is do we fully appreciate our advantages in this line. Never before in the history of the United States have schools of all kinds been so numerous as they now are; never have books been so cheap; never have there been so many public libraries, and the day is surely coming when with the aid of pluck and ambition the sons and daughters of the poor shall stand on the same educational basis as the wealthier classes. In fact that time has nearly come now, for almost every state of our Union has in it such an institution of learning as will compare favorably with our own at Columbus where the price to obtain an education means simply a little more than the price of living.

How very strange it seems that with education as cheap as it is, and when we know the advantages to be derived from obtaining it, still we find occasionally parents who think it more profitable for their sons and daughters after they have reached the age of fifteen to spend the greater part of the year with them upon the farm than to spend it in the school room. But the day of awakening will come when the great educational advantages of this age will be appreciated in the proper manner.

Time will not suffice for me to more than mention a few of the many blessings found along other lines with which this age is crowned.

In that beautiful old hymn, "Joy to the World," so appropriate at the Christmas season, we find these words, "He makes the nations prove the wonders of His love." With the principles and doctrines of Christianity instilled into the minds and hearts of the people by means of the church and Sunday school, and other Christian organizations, love for humanity was never taught and practiced so much as at the present time. In almost every city or town, and throughout the counties are the finest of charitable institutions and hospitals where everyone is cared for in sickness regardless of his religion, his wealth, or his social rank. The remarkable surgical accomplishments and wonderful cures that are being effected every day are alone making this age one long to be remembered.

Again we may repeat it is love for humanity that is transforming this world. As long as the spirit of Christ's love such as was manifested by His life and teachings. shall dominate in our civilization, so long shall we be a prosperous nation. I believe it is because of a stronger foothold of that principle of love that we are today at peace with all the world. For forty years the angel of peace has joined in harmony the north and the south; and the same spirit of good will which has blessed us at home has honored our name abroad. When we think of those four terrible years of war through which our country passed forty years ago; when we think of the awful sorrow, suffering and death that have been experienced in the lands beyond the sea during the past year we thank God for peace.

We thank Him that the star spangled banner is waving in freedom without one star lost from its field of blue! My friends, before we part today let us decide that during the coming year, more than ever before in the past, we shall appreciate our blessings and advantages. Let us stamp improvement on the wings of time. Whether our work is in the school room, the office, the factory, the home, or on the farm, let us so live every day and every hour that when we who are now young shall be nearing the end of life's pilgrimage, our children shall honor us as we honor the memory of our ancestors, those faithful, true-hearted, conscientious pioneers who made it possible for us to enjoy the privileges and advantages of which they never even dreamed.

THE OHIO STATE PROTECTIVE ASSOCIATION.

Organized June 5, 1900. Incorporated December 5, 1900.

OFFICERS FOR 1905.

H. S. Pulse, Lynchburg, Highland County, Ohio, President,
Samuel Decker, Flatrock, Seneca County, Ohio, Vice President.
J. S. McGinnis, Richwood, Union County, Ohio, Secretary.
J. H. Montgomery, R. R. 3, Richwood, Union County, O., Treasurer.

EXECUTIVE COMMITTEE.

H. S. Pulse, J. S. McGinnis, Samuel Decker.

LEGISLATIVE COMMITTEE.

H. S. Pulse, Lynchburg, Ohio.
W. W. Miller, Columbus, Ohio.
D. S. Gaskill, Greenville, Ohio.
J. A. Hubbell, Quincy, Ohio.
John Fippin, R. R. No. 2, Grove City, Ohio.

In presenting this brief report, in the preparation of which the utmost care has been taken, I have endeavored to meet the request for the history and growth of the Ohio State Protective Association. Few citizens of this great state of Ohio really appreciate the magnitude of this association, or realize how marvelously the volume of business has expanded as the growth of the organization has increased. Many otherwise well-informed people are unfamiliar with the workings of the Ohio State Protective Association, carried on in and through the local associations, and much of what I have written will doubtless be a revelation to the farmers and others interested in the subject of more and better protection against crime. The farmers need protection more than any other class. For many years prior to 1887 various anti-horsethief societies were organized in different localities throughout the state, and did excellent work; some of those societies exist today, while others have become incorporated and are members of the Ohio State Protective Association.

It was not until March 21, 1887 (O. L. v. 85, p. 169) that the legislature passed a law giving the association power to become a body corporate, and giving the members more power to pursue and arrest a criminal without a warrant, anywhere in the state; to return the person or persons to the place where the crime had been committed and there secure a warrant. At the very beginning the laws of the state somewhat limited the work of the associations. The Ohio State Protective Association formulated and presented to the legislature a law amending the one referred to above. I am pleased to record the fact that the law was amended and passed April 29, 1902 (O. L. v. 95, p. 298), as it was presented to the legislature; thus giving the association more power and widening its field of usefulness. The farmers of the entire country realize the dangers which have been wrought upon them by so much crime, as they never have before.

Farmers should so combine everywhere to establish and maintain local organizations against crime. You can be of mutual assistance and protection to each other and protection to others outside of your organization. An organization of this kind can accomplish great good, you can do so more effectually by corporation and by union than you can do as individuals. You can give to the State Association a greater reputation and you can assist each other, and certainly nowadays you cannot expect to succeed in anything without co-operation and without a thorough organization. We must make our power available. There is only one way to do it, and that is to organize. I am inclined to think that the farmers realize this as they never did before, that is, the necessity of doing something which they have not generally done in the past. It is true that some of the farmers have been laboring for years to organize associations, but the great mass of them and others have seemed to be indifferent until very recently. But now the farmers seem to be moving as they have never moved before. We find them organizing, and they are commencing to work, and the prospect is very encouraging; this work, well commenced, will be a finished work some time in the near future. Farmers should give this matter their careful attention. This interest has been manifested in the rapid work of organization among the farmers, which has been going on during the past few years in several of the states of the Union. The farmers are now organizing at a rapid rate, and while the Protective Association is forging to the front, they are doing grand work in bringing the farmers together for co-operative work, and the mutual benefits which may be obtained by meeting together, talking together, working together, and acting together. The farmers are inscribing upon their banners the motto: "United we stand to suppress all forms of crime."

It is the desire of the officials of the Ohio State Protective Association to organize the state upon even a broader plane than any of the other states have established. To do so will require time and patience and that share of encouragement and support which we trust the people of Ohio will give to the association, and to the efforts of the officers. It is a pleasure to record the fact that the agricultural papers, generally, and the press have shown a most commendable disposition to co-operate with the association in its effort to keep the farmers informed as to all that may be of practical service to them, and it invites applications for journals of proceedings by interested parties, an important consideration, thereby increasing the membership and enlarging its usefulness. Important progress has also been made during the past year in the organizing of new associations and the increase of membership in the old organizations. What can be accomplished in this line has already been shown in the report and statistics, and there is every reason to believe that equally favorable results can be secured wherever new associations are organized. It has the favor of a great many practical farmers, to whom it has already brought substantial benefits. Crudity and mistakes are here and there apparent, but the general efforts of the associations are toward the greatest usefulness; the wise action of the State Association, the cordial support of the people, state legislation, and the practical results already obtained imply that the State Association has made no mistake in undertaking this enterprise on a larger scale than has been attempted elsewhere. At the same time we should remember that quality more than magnitude decides the value of every enterprise, and that this one can attain its highest success only in proportion as the laws which underlie the practice of the associations are discovered and made available to the practical teachings of the association.

The growing appreciation of the State Association among the people has no better index than the increasing number of letters received. It must be borne in mind that these letters come from all sections of the country, from all classes inspired by the wants of those who are interested in protecting the lives and property of themselves and friends against the depredations of criminals. The development of organizations in the rural districts has been very rapid of late and is full of promise for the immediate future, with results more certain and satisfactory. An immense amount of time is expended in the aggregate upon these local associations. To what extent they may be made subservient to the duties of the State Association is necessarily a matter of speculation. Everything that leads to a more intimate acquaintance between the State Association and the farmers throughout the state must be mutually advantageous.

In closing let me commend the idea of organization. There is no reason why the farmers should not organize; organize for greater security of life and property by mutual protection, to promote true friendship and social intercourse, to cultivate the principles of justice, honor and integrity in its members, to suppress all forms of crime, and to secure the apprehension, conviction and punishment of criminals. All who are interested are urged to call a meeting of the best and most honorable citizens in their communities and organize an anti-criminal association, under the laws of Ohio, Revised Statutes (3705-11), Section 1 (3705-12), Section 2 (3705-13), Section 3, and Section 3709*a*, and make application for membership in the Ohio State Protective Association. For copy of journal and further information write to

H. S. PULSE, PRESIDENT,
Lynchburg, Ohio.

J. S. McGINNIS, SECRETARY.
Richwood, Ohio.

CONSTITUTION OF THE OHIO STATE PROTECTIVE ASSOCIATION.

ARTICLE I.

SECTION 1. *Name.* This Association shall be known as the Ohio State Protective Association.

SEC. 2. *Objects.* Its objects shall be to form a close union of all organizations constituted for the protection of the property of their members, the suppression of crime and the apprehension and conviction and punishment of criminals.

ARTICLE II—MEMBERSHIP.

SEC. 1. Any association organized under the laws of Ohio, Revised Statutes (3705-11), Section 1 (3705-12), Section 2 (3705-13), Section 3 and Section 3709*a*, and whose Constitution and By-Laws do not conflict with this constitution, may become members of this Association.

SEC. 2. Every local association shall be entitled to two representatives or delegates; in the absence of one of these the other may cast the two votes of his association, and seven of such representatives present at any meeting shall constitute a quorum.

SEC. 3. Each local association shall defray the expenses of its delegates.

SEC. 4. All local associations shall hold their elections for officers within sixty days prior to the meeting of the State Association, and shall report the names of officers so elected to the secretary of this association ten days before its regular annual meeting.

ARTICLE III—MEETINGS.

SEC. 1. The regular meetings of the State Association shall be held annually on and after the first Tuesday in February, 1902, at Columbus, Ohio, and shall be called to order at 10:00 o'clock a. m., and continue from day to day until its business is completed.

SEC. 2. *Admission.* Representatives or delegates shall be admitted upon giving satisfactory evidence to the committee on credentials of their right to sit in the meeting.

ARTICLE IV—ELECTIONS.

SEC. 1. The elective officers of this Association shall be President, Vice President, Secretary and Treasurer, and they shall hold their office for the term of one year and until their successors are elected and qualified. The Secretary shall receive an annual salary of twenty-five dollars.

SEC. 2. The officers shall be elected by ballot at the annual meetings in Columbus, Ohio.

SEC. 3. The Secretary and Treasurer shall each give bond in the sum of one thousand dollars ($1,000.00) to the acceptance of the Executive Committee.

ARTICLE V—OFFICERS—THEIR DUTIES.

SEC. 1. The officers provided for in this constitution shall perform the duties usually devolving upon similar officers in like associations.

SEC. 2. The President of the Ohio State Protective Association is by virtue of his office constituted the Grand Organizer for Ohio, and he is authorized to appoint such Deputy Organizers as he may believe to be necessary.

SEC. 3. The President and Deputies are authorized to organize subordinate or local lodges or associations, and receive such compensation as the Executive Committee shall deem fair and reasonable.

ARTICLE VI.

SEC. 1. The Secretary of each local association shall ten days before the first Tuesday in February each year forward to the Secretary a certificate, countersigned by its presiding officer, under seal of the association, of the election of representatives, with annual dues to the State Association. It must also state the number of members in good standing in such association, with number of crimes committed, criminals captured and convicted, stolen property recovered, and any other statistics and matters which may be of interest or advantage to the State Association, and this shall be incorporated in the report of the Secretary of this association. Any association that violates any of the provisions of this section shall be fined five dollars ($5.00) or expelled, at the pleasure of the Executive Committee, or both.

SEC. 2. The membership or initiation fees to local associations shall be not less than one dollar ($1.00), and the charter fees of associations shall be twenty dollars ($20.00) to be paid to the organizing officer when the association shall be organized, and charter fees to be converted into the treasury of the State Association through the Secretary. The State Association shall furnish all local associations organized agreeably to these provisions, with charter and seal, and furnish all necessary equipments and supplies at actual cost.

SEC. 3. The annual dues of local associations shall be one dollar ($1.00) for each association, and a per capita tax of ten cents and pro rata for organizations uniting during the year, payable in advance. Representatives from local associations shall be entitled to seats when dues are paid, not otherwise.

SEC. 4. No debts of the State Association shall be binding upon any of the local associaions nor shall any one of the local associations be in any way responsible for the acts or debts of any other local association.

SEC. 5. The State Association shall have power to expel any officer, member or local association for disorderly conduct or for divulging the unwritten work or plans suggested and discussed by the State Association or any of the local associations.

SEC. 6. The President and Vice President and Secretary shall constitute a committee in whose hands shall be the unwritten work, which shall be permanent except the annual password which shall be given as a final test and which may be changed when the interests of the association demand it.

SEC. 7. There shall be an Executive Committee composed of the President, Vice President and Secretary, and the expenses of this committee shall be paid when engaged in business for the association.

SEC. 8. This constitution may be altered or amended by a two-thirds vote of the delegates present at any regular annual meeting.

BY-LAWS.

SECTION 1. Immediately after calling the State Association to order, the President shall appoint from the representatives the following committees, to consist of three members each:

Committee on Credentials.
Committee on Order of Business.
Committee on Finance.

SEC. 2. All bills before they are passed upon by the State Association shall be referred to the Finance Committtee; also report of the Secretary, Treasurer and all other officers and committees who may be entrusted with the receipt or expenditure of funds of the State Association.

SEC. 3. The State Association shall have power to appoint delegates to kindred associations.

SEC. 4. There shall be a journal of the proceedings of the State Association printed in pamphlet form which shall contain the names of the officers and committees with their addresses; the names and addresses of the President and Secretary of each local association; also the names of the representatives to the State Association and annual report of the Secretary.

SEC. 5. There shall be printed a sufficient number of the journal proceedings to supply all local associations and the Secretary shall forward the same to the secretaries of said local associations as he may be directed at the annual meeting.

SEC. 6. The President of any local organization shall be a secret detective to whom all secret information may be imparted by other associations (under seal) for the investigation of crimes and the apprehension of criminals, and he shall keep the name of his informant secret when requested.

SEC. 7. The President of each local association upon receiving information of stolen property from other associations, shall give the information to the officials working under him and to other members of the association as far as practicable, and shall upon application from any association (under seal) make search and arrest for said association at its expense.

SEC. 8. The unwritten work shall not be given until all other business of the State Association, except the reading of the minutes, be disposed of.

SEC. 9. This Constitution and By-Laws shall take effect and be in force from and after its adoption.

SEC. 10. These By-Laws may be altered or amended by a two-thirds vote of the delegates present at any regular annual meeting.

Ohio Department of Agriculture,

COLUMBUS, OHIO, December 31, 1904.

To His Excellency, Myron T. Herrick, Governor of Ohio:

SIR:—In compliance with law, the Ohio State Board of Agriculture herewith submits the following report of the Division of Nursery and Orchard Inspection for the year 1904.

The annual report of the Chief Inspector, which contains a detailed summary of the work, has been filed and is herewith appended, also a copy of the law passed by the last General Assembly, which provides for the establishment and defines the duties of this division. An average force of six assistant inspectors has been maintained during the past year. The work is steadily increasing and many requests are being received from Ohio and other states for the publications that have already been issued.

Respectfully submitted,

OHIO STATE BOARD OF AGRICULTURE,

By W. W. Miller, Secretary.

THIRD ANNUAL REPORT OF THE CHIEF INSPECTOR OF NURSERIES AND ORCHARDS.

Ohio Department of Agriculture,
Division of Nursery and Orchard Inspection.

COLUMBUS, OHIO, December 31, 1904.

HON. W. W. MILLER, *Secretary the Ohio State Board of Agriculture*:

SIR:—I herewith transmit my third annual report, as Chief Inspector of Nurseries and Orchards, covering the operations of this division for the year 1904.

The work of this division continues to increase, and, as it is being carried out along several different lines, it will be considered under the following headings:

(*a*) Nursery Inspection.
(*b*) Orchard Inspection.
(*c*) Investigation of Insect Pests and Plant Diseases.
(*d*) Tests of Remedies.
(*e*) Publication.

A list of the nurseries of the State follows this report, and also a list of the agents and dealers in nursery stock in Ohio, who have complied with the provisions of the law.

NURSERY INSPECTION.

Owing to the increase in the number of nurseries, and the proximity of some to orchards or cities that are infested with San Jose scale, more time has been spent in making the inspections this year than ever before, and considerable work has been done on nursery grounds during the fall packing season. In fact, nearly one-half of the work of the assistant inspectors has been in and around the nurseries.

Sixteen applications for nursery inspection were received and twenty-four certificates were issued from January 1 to June 1, 1904, eight of these having been held from the year 1903.

Applications received from June 1 to December 31, 1904	408
Certificates of inspection issued	394
Certificates held for various reasons	14

All nursery premises for which applications for inspections have been made during the year 1904 have been examined, making a total of four hundred and thirty-four. These cover an estimated area of four thousand, seven hundred and forty-four acres of growing stock, and nearly two thousand acres of orchards. Sixty-five greenhouses were also inspected.

The following numbers of orchard trees and shrubs on nursery premises have been destroyed by the owners during the year, in acordance with the directions of this division:

Trees destroyed for San Jose scale	1,515
Shrubs destroyed for San Jose scale	16
Currants destroyed for San Jose scale	13
Sprouts destroyed for San Jose scale	72
Trees destroyed for peach yellows	334
Trees destroyed for black knot	95
Sprouts destroyed for black knot	98
Total	2,143
Trees treated for black knot	497

Nursery stock has been condemned and destroyed by the owners as follows:

Trees infested with San Jose scale	12,927
Trees infested with Putnam scale	12
Trees infested with scurfy scale	472
Trees infested with oyster-shell scale	131
Trees infested with woolly aphis	1,496
Shrubs infested with San Jose scale	39
Shrubs infested with oyster-shell scale	12
Trees infected by crown gall	536
Total	15,627

In addition to the above, nearly ten acres of raspberry plants were treated in the spring of 1904 with whale oil soap mixture, in accordance with directions issued by this division, in order to destroy the rose scale, which was becoming abundant, and the results were satisfactory.

Many growers of small fruits have followed our advice and have destroyed their older patches of raspberries and blackberries, so that the plants offered for sale were taken only from young and vigorous stock. This has been very effective in decreasing the amount of anthracnose, which was found in less abundance than in former years, and, coupled with the treatment with Bordeaux mixture, which has been used in many cases at the suggestions of this division, plantations of this kind are, in the main, in vigorous condition.

Crown gall and woolly aphis have caused considerable injury in some sections, and thousands of affected trees have been thrown out at the time of digging the stock.

FUMIGATION.

During the year 1904, trees, shrubs, plants and vines have been fumigated with hydro-cyanic acid gas, in accordance with the directions of this division, as follows:

Trees (fruit and ornamental)	907,603
Shrubs (ornamental)	62,779
Currants and gooseberries	85,545
Plants (raspberries, blackberries, etc.)	400,175
Vines (grapes, etc.)	397,250
Total	1,853,352

Fumigating houses continue to be built, and many of the smaller, as well as the larger, nurseries are equipped to treat their stock in this manner.

The attention of fruit growers is called to the provision in section 2 of the present law relative to granting official certificates of fumigation. Nurserymen will be provided with these on application, and, in all cases, the stock will be fumigated under the immediate supervision of an inspector from this office. The fact that occasionally an infested tree may escape one of the inspectors is a potent argument for the grower to plant only trees that are accompanied with an official certificate of fumigation. It remains, therefore, for growers to demand such certificates from the nurserymen if they desire the protection that is afforded thereby.

Five shipments of nursery stock, containing twenty-one thousand five hundred and nineteen trees and stocks, have been held by express and railroad companies for inspection; they were examined and found free from insect pests and plant diseases and allowed to pass to their destinations.

Two shipments sent out from Ohio nurseries have been reported as containing four trees infested with San Jose scale, and two others have been found with trees containing grown gall. In another shipment containing nine infested trees, reported to have come from an Ohio nursery, it was found on investigation that a part of the shipment was grown in Ohio and the balance in Michigan, and it was impossible to determine the exact source of the infestation. Another shipment which was badly infested was delivered by an Ohio nurseryman in Ohio; the trees came from Kentucky, but they had been thoroughly fumigated and the scales were destroyed.

Nursery Agents and Dealers.

Previous to the passage of the present law, no requirements could be made to regulate these classes of business. Complaints were received that dealers were using the certificates of local nurserymen in an improper manner, and that agents were selling stock upon the pretense that it was grown by some reputable nursery, when, as a matter of fact, this was not the case.

The provisions of section 3 of the present law require agents and dealers to place on file in this division a sworn statement concerning the sources from which their stock is derived, also that it has been officially inspected. The packing grounds of dealers are made subject to inspection and twelve have already been examined this fall.

Agents selling stock for nurserymen within the state who have been granted certificates of inspection are exempt from filing this sworn statement, provided the stock is shipped direct from the nursery to the growers in the original packages. Although this is the case, a considerable number of agents for such nurseries have filed sworn statements, as will be noted in the list published in this report.

ORCHARD INSPECTION.

During the year of 1904, seventy-two petitions for orchard inspection have been received from the following counties: Adams, Ashtabula, Clermont, Crawford, Delaware, Erie, Franklin, Fulton, Geauga, Hancock, Highland, Huron, Lake, Lawrence, Montgomery, Ottawa, Portage, Putnam, Sandusky, Wayne and Wood. Seventy request inspection for San Jose scale and one each for canker worm and peach yellows.

During the year, two hundred and fifteen orchards and premises have been systematically inspected, which required a tree-by-tree examination, as follows:

Trees inspected	188,733
Shrubs inspected	2,532
Currants and gooseberries inspected	6,023
Sprouts inspected	62
Vines inspected	472
Total	197,822

Thirty-nine thousand, four hundred and forty-seven feet of osage orange hedge have also been inspected.

During the year, trees and shrubs have been destroyed or treated, in accordance with the directions of this division, as follows:

	Destroyed.	Treated	
For San Jose scale........	748	217,830	Trees.
For San Jose scale........	1,203	819	Sprouts.
For San Jose scale........		535	Shrubs.
For San Jose scale........	22	4,585	Currants and Gooseberries.
For San Jose scale........		58	Vines.
For peach yellows.........	916	......	Trees.
For black knot............	18	175	Trees.
Total..................	2,907	224,000	

Sixteen thousand, six hundred and eighty-nine feet of osage orange hedge have also been treated for San Jose scale.

The greater part of the inspection of orchards, except those immediately surrounding nurseries, has been done on petition of the owners, in order to ascertain if they were infested with San Jose scale. Few badly infested orchards have been examined, for the reason that in such cases the owners had knowledge of their condition and would have applied suitable remedies if they valued their trees. In case infested orchards are in a fruit growing section, and are a source of injury to those surrounding, an examination can be made and treatment enforced on petition of such interested parties. The dearth of reliable men who will spray thoroughly is one of the features that makes the work difficult. This is true in city and country, but does not apply so forcibly in fruit growing districts where the more intelligent and progressive horticulturists practice spraying and consider it one of the essential parts of their business.

Treatment of orchards infested with San Jose scale has been more general and thorough during the past year than ever before. The lime and sulphur washes have been used and have given satisfactory results.

Winter Injury to Orchards.

The winter of 1903-1904 was very severe and caused widespread injury to orchards, more especially to peach trees. Trouble of this sort has been reported from many states, and Ohio experienced her share in this respect. The peach belt along Lake Erie sustained the greatest loss.

During the last part of June and early in July, my assistant, Mr. H. J. Speaker, made examinations in Ottawa county of the orchards in Catawba Island, Danbury and Portage townships; one day was also spent in Put-in-Bay township. The following table gives the number of dead and seriously injured trees that were found, also the number of peach trees growing in each township as computed from the report of the county auditor for 1903:

Township.	Peach trees.	Trees killed or seriously injured.	
		In orchards badly infested with San Jose scale.	In orchards slightly infested with San Jose scale.
Catawba Island	225,920	61,715	13,540
Danbury	226,940	42,715	13,340
Portage	389,760	7,642	6,875
Put-in-Bay	28,140	....	....
Total	900,760	112,072	33,755

Trees in Put-in-Bay township, where only a small amount of San Jose scale exists and where the orchards are not, as a rule, well cultivated, showed no unusual amount of injury.

In summing up this data many facts must be taken into consideration, such as location, kind of soil, the previous treatment of orchards, as to cultivation, pruning and spraying, and the condition and vigor of the trees. The varieties most seriously injured were Smock, Salway and Crawford, but in orchards badly infested with San Jose scale all varieties seemed to be equally injured. It appears, however, that orchards containing trees which had been previously weakened from any cause whatever, such as San Jose scale, leaf curl, or the ill effects of the use of crude oil, were generally the greatest sufferers from the severe winter. Many orchards that were well cultivated and pruned also suffered severely, and this lends force to the belief of many growers that cover crops or mulches should be used in the orchard for winter protection.

The lesson which this teaches is that the trees must be kept in a healthy and vigorous condition, free from destructive pests, and that greater care must be given them by growing cover crops or mulching to protect them from the rigors of our winter season.

INVESTIGATION OF INSECT PESTS AND PLANT DISEASES.

Investigations were made during the year of the occurrence and damage done by the canker worm and tent caterpillar, of the pests affecting grapes and of the elm leaf beetle, an imported insect which is very destructive to elm trees, and which was found for the first time in Ohio at Dayton this fall.

Canker Worm.

Nearly four hundred apple orchards, containing over forty thousand trees, were examined in different sections of the State during May and the first part of June. Some of these orchards were large, but most of them covered only small areas. Many of the localities visited were those that had not previously been examined. The insect was found more abundant and destructive than last year. In some cases, the visits of the inspectors and the information given by them caused the owners to begin spraying operations, while others who were unprepared determined to take up the work next year. The inspection also resulted in the discovery of several outbreaks of the San Jose scale, which were unknown to the owners of the premises.

The following data, compiled from the reports of the canker worm investigations, is given, as it shows, approximately, the interest that is being taken in spraying by owners of small orchards:

Owners interviewed	306	
Owners who do not spray	211	69 per cent.
Owners who have sprayed once and failed	20	6 per cent.
Owners who have sprayed successfully, but now neglect to do so	18	6 per cent.
Owners who spray regularly	57	19 per cent.

Among those who do not spray were found a small per cent. who believe that spraying pays and who propose to give it a trial. Many of the orchards, however, were declining, and not a few of the owners were so much discouraged that they proposed to cut out their trees. In some cases, orchards of fifteen or twenty acres had been destroyed, because of failure to control the canker worm. In most instances where spraying had proved a failure Paris green was used, and the treatment had been applied when the worms were nearly developed. Six per cent. of the owners had sprayed with good results, and had either been so successful in controlling the canker worm that they thought it unnecessary to apply treatment another year, or they had neglected to do so for various reasons, although being firmly convinced that it was a profitable and necessary undertaking.

More than one spraying should be applied to control the codling moth, even if no canker worms are present in the orchard, and it is as necessary for profit to secure clean fruit free from worms as to keep the leaves in a healthful condition. For best results, attention must be given to both insects.

Of the fifty-seven owners who sprayed regularly, two used London purple, forty Paris green and fifteen disparene. The more progressive and successful growers had abandoned the use of Paris green and had found disparene more satisfactory. Good results had in many cases been secured by using Paris green; London purple was pronounced by many as very unsatisfactory.

The lesson to be drawn from this data, and it is particularly applicable to parties who expect to plant small orchards, is that there can be very little hope of success unless the best modern methods are studied and *applied* to the management of their trees. If an owner is unwilling to do this he should invest his money in some other line to which he will give his best thought and attention.

Tent Caterpillar.

During the canker worm investigations, the tent caterpillar was found to be doing considerable damage in the western and northwestern counties of the State. No difficulty will be encountered in controlling this insect if spraying is applied as directed for the canker worm.

San Jose Scale.

Many city lots and small orchards have been visited during the year, on the request of the owners, in order to determine whether this insect was present. In a few cases it had been confused with the scurfy scale, but where the San Jose scale was found all information possible was given the owners, so that they could take measures to protect their trees.

Since the last report was made, San Jose scale infestation has been reported from twenty orchard localities in different parts of the State. It has also been found in the following cities and towns: Florida, Leesburg, Napoleon, Norwalk, Ostrander, Sandusky, Sycamore, Upper Sandusky and West Carrollton.

The report concerning a number of these infested localities has been received through the courtesy of the Ohio Agricultural Experiment Station.

Natural Enemies of San Jose Scale.

The colony of Asiatic lady birds, which was located in Clermont county in August, 1903, survived the winter, but after the first examination of the orchard last spring the beetles disappeared; whether this was due to the presence of their native enemies or to birds it is not possible to say, but at the present time, as far as we have been able to determine, the colony is extinct.

Investigation of Grape Pests.

For many years the vineyards along the lake shore have been injured by insect pests and plant diseases. These seem to increase annually in number, and, at the request of the growers in the vicinity of Euclid, a series of observations was made during the spring of 1904, to determine the extent of the damage and the pests that were directly responsible for it. This work was placed in charge of my assistant, Mr. Otto H. Swezey, who made a number of visits and spent considerable time in this vicinity during June and July. Unfortunately for this work, Mr. Swezey resigned late in July to accept a flattering offer as Assistant Entomologist to the Hawaiian Experiment Station, at Honolulu, H. T., so the work could not be carried through the season, in accordance with the original plan.

Enough data were obtained, however, to indicate the presence of most serious pests and to make suggestions as to the best methods of combatting them. It is the intention to continue this work next season and make tests, with a view of obtaining cheaper and more satisfactory remedies.

The owners of vineyards in the vicinity of Euclid are fortunate in that very little trouble has been experienced with the grape rot, which in other sections of the grape belt, especially further to the east, has been seriously injurious for several years and this has been one of the immediate causes for the destruction of many vineyards. On the other hand, this locality has suffered much from the ravages of the grape root worm, while the eastern section of the grape belt has not been seriously affected by this pest.

It was found that considerable confusion exists concerning the identity of the insect pests which injure this crop, and in some cases reports of injury by the root worm were found to be due to the presence of the grape berry moth, an entirely different insect.

From the data collected and observations made by Mr. Swezey, it appears that the grape root worm was not as abundant or destructive this year as in the past, and this was found to be true in unsprayed, as well as sprayed, vineyards, and also where the vines had been neglected and the vineyards practically abandoned.

The grape berry moth was present in many vineyards and caused serious injury. Last year nearly 30 per cent. of the crop was ruined in some vineyards, and the loss this year was fully as great.

A New Grape Pest.

About June 10, 1904, Mr. John Maxwell, of Euclid, noticed that some of the blossom buds on his vines had become enlarged and were turning red; also, that on opening such buds several white or yellowish worms were found. On the arrival of Mr. Swezey at this vineyard his attention was called to the matter and an examination showed that the worms were the immature stage of a small fly, which, as far as can be determined, is a newly discovered insect.

The buds thus affected fail to develop berries and this makes the clusters irregular in form and causes considerable loss. An examination of many vineyards, both on the high land and in the flat localities nearer the lake, showed that the insect was generally distributed throughout. In some cases nearly one-fifth of the clusters were infested, and as many as twenty-five affected buds were found in a single cluster. As the minute larvæ drop to the ground, and evidently complete their transformations in the soil, it is a difficult matter to rear them to the adult stage. From their structure, however, it is evident that they transform into tiny flies, which closely resemble adult Hessian flies.

No treatment for the control of this insect can be suggested at this time, but further investigations may serve to discover a remedy. Mr. T. S. Clymonts, and several other progressive growers in this section, state that they have observed the work of this insect for several years, but believed it to be a stage of the grap berry moth.

This new pest was found in the Chautauqua grape belt in New York on June 12, 1904, by Mr. Fred Johnson, who was working on grape pests with Prof. Mark V. Slingerland, Entomologist to the Cornell Experiment Station. I am also informed by Dr. E. P. Felt, State Entomologist of New York, that he has found it in many vineyards this year.

The Elm Leaf Beetle.

This insect was discovered in Dayton by Mr. George A. Runner, one of my assistants, while engaged in nursery inspection work in that vicinity. Specimens were received by me August 30, but as they were in very poor condition a visit was made to Dayton early in September. Accompanied by Mr. Runner, an examination was made of the elm trees on the grounds of the National Cash Register Company, where the specimens had been obtained. Larvæ, pupæ and adult beetles were also found on adjoining premises and on the grounds of the Montgomery County Agricultural Society. The managers were notified and they promised to do everything possible to check the pest. Later in September an examination of the city trees was begun. This resulted in the insect being located in nearly all sections where elm trees had been planted. Observations made in many cities in the State have failed to reveal the presence of this insect, but it probably occurs in other localities.

It is not a native species, but was introduced into this country from Europe several years ago. In many cities and towns in Massachusetts, Connecticut and New York, the elm trees have been so severely attacked that it is necessary to spray them annually, in order to protect the foliage. Owing to the size that these trees grow, this is a difficult and expensive operation.

The beetle resembles very much the common striped cucumber beetle. It makes small holes in the leaves, which are often eaten to such an extent that very little remains except the veins. The larvæ, or immature form of this insect, feed upon the green tissue of the leaf, so that affected trees have a peculiar appearance, which is very characteristic. Feeding begins soon after the leaves appear in the spring and continues until late in the fall, and, as the insects are very prolific, serious damage may be done in a single season.

The European elm appears to be the favorite food plant of this pest, although many cases have been noticed where American elms have been seriously attacked.

The most successful remedy, and the one almost universally used against this pest in the east, is to spray the trees early in the summer with disparene or arsenate of lead, using five pounds to fifty gallons of water. During the summer, the trunks and ground at the base of the trees often harbor many larvæ and pupæ, and these may be destroyed by applying a weak solution of kerosene emulsion, whitewash, or whale oil soap mixture, used at the rate of one pound of soap to four gallons of water.

From the general distribution of this insect in Dayton, it is evident that energetic measures will have to be taken in the near future to protect the elms from this pest, as no tree is able to withstand continual defoliation. Trees in Dayton have been found completely stripped of leaves, and in one instance a second crop of leaves had started and was being devoured.

TESTS OF REMEDIES.

Many tests have been made during the past year for the control of insect pests and plant diseases. Among the principal ones may be mentioned, comparative sprayings with Paris green and disparene for the control of the codling moth, treatment with various modifications of the lime and sulphur wash for San Jose scale and other insects and numerous tests with hydro-cyanic acid gas.

Aside from the San Jose scale, the codling moth is the most serious insect pest with which the apple grower has to contend, and, although spraying has been recommended for years and is practiced by the more progressive growers, the question as to the best time of making treatments and the cheapest and most satisfactory poison to use still remains unsettled. Nearly four hundred trees were treated this year, but only a few of the results will be given in this report. The advantages of disparene over Paris green were manifest, and the necessity of making a spraying late in July for the control of the second brood of moths was demonstrated.

Treatment for San Jose scale consisted of applications of the lime and sulphur washes with various modifications, including the use of caustic soda in their preparation. Over seven hundred trees, principally apple, were used in these experiments. The lime and sulphur wash made according to the following formula proved satisfactory on all kinds of trees: fifty pounds of stone lime and fifty pounds of sulphur boiled for one hour and diluted with water to make one hundred and fifty gallons of wash.

Equally good results were obtained whether hot or cold water was used to dilute the mixture, but it sprayed slightly better when the former was used. Our tests show that excellent results were obtained when both the amounts of lime and sulphur were reduced to thirty-seven and one-half pounds to make the same quantity of wash. These sprays were as effective for controlling the peach leaf curl as where salt or copper sulphate was added. Washes made by using suphur and caustic soda, and sulphur, lime and caustic soda were applied to apple and peach trees in April. Practically all the peach trees were killed by the severe winter so that no results were obtained from this part of the test. Some of the mixtures applied in the apple orchard gave promising results on October 21, the time of the last examination. Further trials will be made next spring. For the present the boiled lime and sulphur wash mentioned above is recommended.

Fumigation experiments have been made to test the effect of hydrocyanic acid gas on different kinds of scale insects, and also on several varieties of trees and shrubs. As the results cannot be determined until next summer no further statement is given at this time. The result of an experiment in treating a fruit storage house with this gas for destroying codling moth larvæ has been published in a separate paper.

PUBLICATION.

Aside from numerous articles that have been written for the daily and agriculutral press, a number of bulletins and papers have been issued during the year. Bulletin No. 3, referred to in the following list, was prepared by Mr. Otto H. Swezey, one of the assistant inspectors of this division, and is technical rather than economic in character.

"Canker Worms in Ohio."—(Bulletin No. 2, Division of Nursery and Orchard Inspection, Ohio Department of Agriculture.)

"A Preliminary Catalogue of the Described Species of the Family Fulgoridæ of North America North of Mexico."—(Bulletin No. 3, Division of Nursery and Orchard Inspection, Ohio Department of Agriculture.)

"Nursery and Orchard Inspection in Ohio, 1904."—(Report of the Annual Meeting of the Ohio State Horticultural Society, at Chillicothe, Ohio, December 20-22, 1904.)

"The Fumigation of a Fruit House for Controlling the Codling Moth."

"Some Economic Insects for the Year 1904."—(Report of the Seventeenth Annual Meeting of the Association of Economic Entomologists, at Philadelphia, Pa., December 29-30, 1904.)

Acknowledgments.

The writer would thankfully acknowledge his appreciation of the many courtesies extended by Professors Osborn, Lazenby and Davis, of the Ohio State University, of the co-operation extended by numerous fruit growers and nurserymen throughout the state, which has made possible many of the tests already mentioned, and the faithful and efficient work of the assistant inspectors of this division.

Respectfully submitted,

A. F. BURGESS,

Chief Inspector.

The Nursery and Orchard Inspection Law of the State of Ohio.

SECTION 1. The Ohio State Board of Agriculture is hereby empowered and directed to make such regulations as may be deemed necessary for the control of dangerously injurious insect pests and plant diseases, and for the prevention of the spread of San Jose scale, peach yellows, black knot and any other dangerously injurious insect pests or plant diseases, which are hereby declared a public nuisance, and are liable to be transmitted on nursery stock. Said board is hereby authorized to establish a Division of Nursery and Orchard Inspection in the Ohio Department of Agriculture, and to appoint a competent Entomologist as the Chief Inspector of said division, and the necessary assistants, who shall, under the direction of the board have charge of the inspection of nurseries and orchards, as hereinafter provided; he may investigate, or cause to be investigated, outbreaks of dangerously injurious insect pests or plant diseases, and recommend suitable measures to be taken for their eradication or control; he is empowered to devise and test practical remedies for their suppression, and publish the results of these investigations and such other information as may be deemed necessary.

SEC. 2. Every nurseryman or other person in the State of Ohio who is engaged in growing trees, shrubs, plants and vines for sale, except such as are hereinafter specified, shall on or before the first day of July of each year place on file in the office of the Ohio Department of Agriculture an application for the inspection of his nursery stock and premises. Failure to file such application, or the disposal of uninspected stock, either by sale or gift, shall render the owner liable to the penalty provided for in section 8 of this act. The Chief Inspector shall examine, or cause to be examined, before September 15th of each year, or as often as may be deemed necessary by said board, the nurseries and premises of all parties whose applications for inspection have been filed. If upon such examination the nursery stock and premises appear to be free from San Jose scale, peach yellows, black knot and other dangerously injurious insect pests or plant diseases, a certificate of inspection shall be given to the owner or lessee stating the facts, and said certificate shall be issued before September 15th and shall be valid for one year from that date unless sooner revoked for cause. If any dangerously injurious insect pests or plant diseases are found on nursery stock or premises, the Chief Inspector shall order and enforce such treatment, as shall be deemed sufficient, before granting a certificate of inspection. Upon the written request of the owner or lessee of any nursery premises that has been regularly inspected in accordance with the provisions of this section the said board, through the Chief Inspector, may issue a certificate of fumigation, provided that all the requirements of the said board have been complied with, and that the said fumigation shall be in accordance with the directions, and under the supervision, of an authorized Assistant Inspector appointed by said board. The provisions of this act shall not apply to greenhouse plants and cuttings thereof, bulbs, flowers and vegetable plants.

SEC. 3. Every agent, dealer or any other person, not engaged in growing trees, shrubs, plants or vines for sale, who sells or delivers such stock, shall before delivering the same annually place on file in the office of the Ohio Department of Agriculture a statement made under oath, before an officer qualified to administer oaths in the locality where he may reside, or if a non-resident of the state in the locality where the said stock is sold or delivered, that the said stock has been duly inspected and was received by him accompanied with a valid official certificate of inspection or fumigation. Said statement shall also designate the name of the grower or growers from which such stock was obtained and the name of the owner or owners of the certificate or certificates under which the same is sold or delivered. The premises of any such person or persons as aforesaid shall be subject to inspection and to such regulations as may be deemed necessary by the Ohio State Board of Agriculture, for the prevention of the spread of dangerously injurious insect pests or plant diseases. Failure to file such sworn statement, or the sale or delivery of such stock after the certificate under which it was bought has become invalid shall render the agent or dealer liable to the penalties prescribed in section 8 of this act. The provisions of this section shall not apply to any person or persons who sell or deliver such stock from nurseries within this state that hold a valid certificate, which is provided for in this act, if the said stock is delivered direct from the nursery to the grower in the original package.

SEC. 4. Whenever a nurseryman or any other person, shall ship, or deliver, within this state, except for scientific purposes, trees, shrubs, plants or vines, commonly known as nursery stock, not excepted in section 2 of this act, he shall place upon each car load, box, bale or other package, a copy of certificate provided for in section 2 of this act, and signed by the Chief Inspector, stating that the said stock is apparently free from dangerously injurious insect pests and plant diseases. The illegal use of said certificate, by changing, defacing, or placing it on uninspected stock, or using the same after the date of expiration or revocation, shall render the owner or shipper liable to the penalties prescribed for a violation of this act.

SEC. 5. Every package of trees, shrubs, plants or vines shipped into this state from any other state, territory, country or province, shall be plainly labeled on the outside with the names of the consignor and consignee, and a certificate stating that the contents have been inspected or fumigated by a state or government officer, and that the trees, shrubs, plants or vines therein contained are apparently free from dangerously injurious insect pests and plant diseases. If any trees, shrubs, plants or vines shall be shipped into this state without such certificate plainly affixed on the outside of the package, box or car containing the same, the facts must be reported within twenty-four hours to the Chief Inspector, or a regularly appointed assistant, by the railroad, express or steamboat company, or by any other person or persons carrying the same, and it shall be unlawful to deliver such property until it has been examined by a regularly appointed inspector, and by him certified to be apparently free from dangerously injurious insect pests and plant diseases. Any agent or common carrier, or persons carrying such property as aforesaid, who shall fail to give such notice as is hereby required, shall be deemed guilty of a violation of this act. When nursery stock is shipped into this state accompanied by a certificate, as herein provided, it shall be held as prima facie evidence of the facts therein stated, but the Chief Inspector, when he has reason to believe that any such stock is infested or infected, as hereinbefore described, is hereby authorized to cause the same to be examined. In case the same is found to be infested or infected by dangerously injurious insect pests or plant diseases, it shall be seized and the shipper shall be immediately notified, and after ten days from such seizure it may be declared a public nuisance and destroyed.

SEC. 6. Upon the petition of any freeholder or lessee within the State of Ohio, the Chief Inspector may cause to be examined any trees, shrubs, plants or vines, either on the premises of said petitioner, or in dangerous proximity thereto, as to the presence of dangerously injurious insect pests or plant diseases; and shall by himself, or through his assistants, have the right, within reasonable hours, to enter upon any premises in the prosecution of the duties defined in this act. If the examination discloses the presence of San Jose scale, peach yellows, black knot or any other dangerously injurious insect pests or plant diseases, the Chief Inspector shall notify the owner or lessee of the premises in writing of the facts by mailing such notice to his usual postoffice address. He shall also state the limit of time within which treatment must be applied by the owner or lessee, in accordance with the directions issued by the Ohio State Board of Agriculture, and specify such trees, shrubs, plants or vines as must be destroyed, also when they shall be declared a public nuisance, provided the aforesaid orders are not complied with. Should the owner fail to apply the treatment required in said notice in a satisfactory manner, and within the time specified, such treatment may be carried out under the direction of the Chief Inspector, and the entire cost of such treatment shall be certified to the county auditor of the county in which the property is located, and the same shall become a lien on the premises and shall be collected by the county treasurer as other taxes, and when collected shall be paid to the Ohio State Board of Agriculture. The owner of any premises as hereinbefore mentioned shall, in addition, be deemed guilty of a violation of this act, by reason of failure to comply with the requirements of said notice and shall be liable to the penalty provided.

SEC. 7. Whenever the Chief Inspector, or any duly appointed Assistant Inspector, shall order any trees, shrubs, plants or vines growing in this state, or any nursery stock that has been shipped in from outside the state, to be destroyed, and the owner shall fail, for ten days after notice of such order, to destroy the same, as directed by such order, such failure shall be deemed a demand on the part of the owner to have judicially determined the right to enforce such destruction, and shall act as a stay upon the proceedings until such judicial determination shall be had; and, in such case, the Chief Inspector, or any duly appointed Assistant Inspector, shall commence, without delay, an action in the Probate Court of the county in which the trees, shrubs, plants, or vines, or nursery stock are located, by filing an affidavit therein, setting forth that the trees, shrubs, plants, or vines, or nursery stock are infested or infected with dangerously injurious insect pests or plant diseases, a description of the premises whereon the same are located, the name of the owner or lessee of such premises, and of all persons having an interest in such premises or trees, shrubs, plants or vines, and, if the same are nursery stock, the name of the person, firm or corporation in whose possession the same are found, and that ten days have elapsed since orders have been made for the destruction of the same, and that such orders have not been obeyed. Upon such affidavit being filed the probate judge shall issue a summons for all persons named in such affidavit, which shall contain a copy of said affidavit, commanding them to appear at a time to be fixed therein, not exceeding five days from the date thereof, to answer such complaint; such summons shall be directed to, and served by, the sheriff of the county, and may be served by him in any county in this state, and shall be served and returned, as directed by said Probate Court. At the time fixed in such summons, if the jury be not waived, said court shall order a jury to be drawn, and such jury shall be drawn, summoned, and impaneled as in other civil cases, in Probate Courts, and the State of Ohio shall be plaintiff and the persons named in the affidavit shall be defendants, and no pleadings other than such affidavit shall be required, and the issue shall be whether said trees, shrubs, plants or vines, or nursery stock, are infested or infected with dangerously injurious insect pests or plant diseases, and all proceedings shall be had in the trial of such complaint, as are provided for the trial of civil cases, in Probate Courts. If the jury shall find that the orders for the destruction of the trees, shrubs, plants or vines, or nursery stock shall be obeyed, it shall return a verdict finding the issues with the plaintiff, but if it should fail to so find, it shall return a verdict finding the issues with the defendant, or defendants; and if the issues are found with the plaintiff, the court shall enter judgment against the defendant, or defendants, for costs, and cause execution to be issued therefor, and shall issue an order to the Chief Inspector, or Assistant Inspector, to enforce the orders by him made; but if the issues are found with the defendant, or defendants, the action shall be dismissed and the orders for destruction annulled, and the costs shall be ordered paid by the Ohio State Board of Agriculture, and paid by it out of any funds appropriated for carrying out this act. In the matter of taxing and apportioning costs, the court shall have the same equity powers as are now conferred upon courts of common pleas.

SEC. 8. Any owner or lessee who shall fail, neglect, or refuse to treat infested or infected trees, shrubs, plants or vines within the time, and in the manner, prescribed in said notice, and any person who shall be ordered to destroy any trees, shrubs, plants or vines, or nursery stock, and shall fail, neglect or refuse to destroy the same, as ordered, within ten days after the Probate Court shall have issued its order to the Chief Inspector, or Assistant Inspector, to enforce the orders by him made, and any person who shall fail, neglect, or refuse to comply with, or obey, any order made pursuant to the provisions of this act, or who shall fail, neglect, or refuse to comply with any of the requirements or provisions hereof, or who shall violate or neglect to carry out, or offer any hindrance to the carrying out of any of the provisions of this act, shall be adjudged guilty of a misdemeanor, and, upon conviction thereof, shall be fined not less than ten dollars or more than one hundred dollars for the first offense, and not less than fifty dollars or more than three hundred dollars for any subsequent offense, and the cost of prosecution, and stand committed until the same are paid. It shall be the duty of the prosecuting attorney of the county to conduct all prosecutions under this act, and all fines recovered shall be paid to the Ohio State Board of Agriculture. The Probate Court of each county in this state shall have original and final jurisdiction in all the prosecutions under any of the provisions of this act, and, for the trial of the same, such courts shall always be open regardless of the terms fixed in said courts for the trial of criminal cases, and the complainant shall not be required to give security for costs.

SEC. 9. The Ohio State Board of Agriculture shall make an annual report to the Governor of the state concerning the operations of the Division of Nursery and Orchard Inspection, which shall give the number of nurseries inspected, the number of certificates issued, the number of trees treated and destroyed by the direction of the Chief Inspector, and such other information as may be deemed necessary.

SEC. 10. Said act passed May 10, 1902, entitled "An act to amend an act passed April 14, 1900, entitled 'An act to prevent the introduction and spread of the San Jose scale and other dangerous insects and dangerously contagious diseases affecting trees, shrubs, vines, plants and fruits' " is hereby repealed; and that this act shall take effect and be in force from and after its passage.

LIST OF OHIO NURSERYMEN.

1904--1905.

Name and Address of Owner.	Name of Nursery.	County.	No. Certificate.
Adkins, C. B., North Kenova, O.		Lawrence	169
Albaugh Nursery & Orchard Co., The, N. H. Albaugh, Prest., Phoneton, O.		Miami	144
Allen, M. W., 507 West Sixth St., Cincinnati, O.		Hamilton	365
Allen, W. A., R. R. 3, Geneva, O.	Woodbine Nursery	Ashtabula	380
Almack & Lear, Coshocton, O.		Coshocton	319
Anderson, U. S. G., Huntington, W. Va.		Lawrence	113
Anneshausley, C. B., R. R. 5, Lancaster, O.		Fairfield	251
Armstrong, A. C., Elkton, O.		Columbiana	308
Arnold, S. J., R. R. 2, Dayton, O.	Hope Fruit Farm	Montgomery	45
Ashford, J. C., East Carmel, O.		Columbiana	266
Aultfather, H. H., Minerva, O.		Stark	376
Bailey, S., Ansonia, O.	Bailey Nursery	Darke	28
Bailey, W. W., Yellow Springs, O.	Yellow Springs Fruit Farm	Greene	66
Baird & Brady, Troy, O.	Eureka Nursery	Miami	118
Baird, W. A., R. R. 3, Bucyrus, O.		Crawford	323
Baker, C. V., Stoutsville, O.	Wildwood Fruit Farm	Fairfield	2
Barber, S. A., Ryansville, O.		Lawrence	76
Barker, J. H. & Son, R. F. D., Middleport, O.		Meigs	157
Barnes, A. & Sons, Mt. Healthy, O.		Hamilton	44
Barnes, J. A., R. R. 2, Lisbon, O.		Columbiana	389
Barnes, M. & Company, R. R. 3, Mt. Healthy, O.	Barnes Nurseries	Hamilton	43
Barnes, T. J. & Sons, R. R. 1, Sandusky, O.		Erie	141
Barr, L. M., R. R. 1, Dayton, O.		Montgomery	193
Barton, R. A., Rocky Hill, O.		Jackson	22
Basinger, John H., R. R. 2, Calla, O.		Mahoning	343
Bear, Mrs. J. C., R. R. 8, Dayton, O.	Bear's Nursery and Fruit Farm	Montgomery	198
Bell, Simon & Son, R. R. 3, Junction City, O.	Monday Creek Stock and Produce Farm	Perry	225
Benner, J. H. & Sons, R. R. 3, Johnstown, O.	Mulberry Row Nursery	Licking	13
Benson, A. R., New Carlisle, O.		Clark	106
Berk, Theo., R. R. 1, Dayton, O.		Montgomery	178
Bernard, A. F., Painesville, O.	Rosemont Nursery	Lake	132
Bernard, F. F., Painesville, O.	Fairport Nursery	Lake	130
Berry, P. D., R. R. 3, Dayton, O.		Montgomery	197
Bertolette, Glen, Columbiana, O.		Columbiana	342
Betscher, George, Canal Dover, O.	Dover Nursery	Tuscarawas	382
Binnig, F. W., R. R. 1, Painesville, O.		Lake	131
Birch, J. B., Carrollton, O.	Carrollton Nursery	Carroll	316
Black, R. J., Bremen, O.	Black's Nurseries	Fairfield	228
Bodiker, W. E., R. R. 1, Osborn, O.		Miami	173
Bohlender, Peter & Son, Phoneton, O.	Springhill Nursery	Miami	183
Boice, M. C., Kyger, O.		Gallia	155
Boley, J. T., R. R. 4, New Lexington, O.		Perry	226

Booth, O. E., Barnesville, O.		Guernsey	216
Bork, Philip, R. F. D., Tiffin, O.		Seneca	274
Botkin, S. C., R. R. 4, New Carlisle, O.	Bethel Fruit Farm	Clark	103
Bowen, John D., Dexter, O.		Meigs	164
Bowles, Newton, Dexter, O.		Meigs	162
Bowman, D. C., R. R. 1, Sheridan, O.		Lawrence	75
Bowmaster, Frank, Tippecanoe City, O.		Miami	137
Brandt, L. M. & Son, Huntsville, O.		Logan	5
Brewster, E. M., Perry, O.		Lake	205
Brookhart, S. A., R. R. 3, Wapakoneta, O.	Variety Fruit Farm	Auglaize	384
Brown Brothers, R. R. 2, Yellow Springs, O.	Farmers' Exchange	Greene	67
Brown, Charles C., R. F. D., Cardington, O.		Morrow	259
Brown, LeRoy N. & Co., R. R. 2, Clyde, O.		Sandusky	326
Buechly, E. M., Greenville, O.	Buechly Nursery	Darke	52
Bull & Sutton, St. Paris, O.	Champaign Nursery and Orchard Co.	Champaign	50
Buren, Andrew V., North Berne, O.		Fairfield	232
Burks, Ambrose, R. R. 1, Springfield, O.		Clark	92
Burks, S. L., R. R. 1, Springfield, O.		Clark	91
Butts, Marcus, R. R. 4, Greenville, O.		Darke	87
Cain, James G., R. F. D., Marietta, O.		Washington	359
Call, S. W., Perry, O.		Lake	215
Campbell, Allen, Elkton, O.		Columbiana	272
Cambpell, L. W., Barnesville, O.		Belmont	221
Carr, L. W., 3360 Detroit St., Cleveland, O.	Lakewood Nursery	Cuyahoga	94
Carr, M. L. & Sons, Yellow Springs, O.		Greene	68
Carson, William & Sons, R. F. D., Middleport, O.	Carson Nursery	Meigs	156
Cartwright, I. D., 22 St. Clair Bldg, Toledo, O.		Lucas	346
Chalfant, J. W. & Son, R. R. 1, Centerburg, O.		Morrow	300
Champion, H. J., Perry, O.		Lake	262
Christensen, James, 2459 Detroit St., Cleveland, O.		Cuyahoga	93
Christian, S. B., R. R. 1, Bradford, O.		Darke	48
Clark, Catherine W., Ravenna, O.	Brookside Farm	Portage	286
Cole, W. B., Painesville, O.	The Avenue Nursery	Lake	223
Collier, J. A., R. R. 8, Springfield, O.		Clark	124
Columbus Nursery Co., The, E. W. Yantes, Prop., 46 Smith Place Columbus, O		Franklin	368
Cook, J. H. & Son, R. R. 1, Perry, O.		Lake	207
Cope, Eliphas, Rogers, O.	Rogers' Nursery	Columbiana	263
Cope, H. D. & Sons, East Carmel, O.		Columbiana	265
Cope, James, R. R. 1, Elkton, O.		Columbiana	271
Cowen, Ellsworth, Barnesville, O.		Belmont	212
Cowen, Robert, Barnesville, O.		Belmont	247
Cowen, Ross, Barnesville, O.		Belmont	315
Cox, E. G., Rockwood, O.	Ensee Nursery	Lawrence	116
Crawford, John H., East Carmel, O.		Columbiana	267
Crawford, M. Co., The, R. R. 2, Cuyahoga Falls, O.		Summit	69
Crow & Wolf, Fidelity, O.		Miami	170
Crow, Harry, R. R. 1, Dayton, O.		Montgomery	179
Davis, Russell, R. R. 1, Xenia, O.		Greene	110
Day, John, Fremont, O.	Fremont Nursery	Seneca	340
Dewees, Thomas, R. R. 1, Barnesville, O.		Belmont	375
Earhart, W. H., Lexington, O.		Richland	297
Eaton, L. D., Labelle, O.		Lawrence	246
Edgerton, W. D., R. R. 1, Barnesville, O.		Belmont	283
Elsea, C. R., Lithopolis, O.	Chestnut Ridge Nursery	Fairfield	1

LIST OF OHIO NURSERYMEN—Continued.

Name and Address of Owner.	Name of Nursery.	County.	No. Certificate.
English, J. R., 163 Lawrence St., Ironton, O.		Lawrence	80
Ernst, Chas., Moscow, O.	Moscow Nurseries	Clermont	370
Ernst, C. J., R. R. 1, Perry, O.		Lake	238
Ernst, Samuel, R. R. 6, Wauseon, O.		Fulton	351
Esty, J. H., Tippecanoe City, O.		Miami	139
Euclid Avenue Nursery Co., The, C. W. Metcalf, Prop., E. Cleveland, O.		Cuyahoga	96
Ewart, Mortimer, Mogadore, O.		Summit	39
Ewart, W. L., R. R. 18, Tallmadge, O.		Summit	40
Ewing, John T., R. R. 1, Pomeroy, O.		Meigs	151
Ewing, T. E., Wooster, O.	Wooster Nurseries	Wayne	34
Fall, J. C., Twin, O.		Preble	202
Farmers' Nursery Co., The, T. J. Dinsmore, Prest., Tippecanoe City, O.		Miami	180
Farnsworth, W. W., Waterville, O.	Clover Leaf Fruit Farm	Lucas	350
Fauver, Irving C., Bement, O.		Cuyahoga	95
Fey, Edward, R. R. 1, Dayton, O.		Montgomery	393
Finck, David, R. R. 2, Somerset, O.		Perry	227
Finney, T. T., Millesrburg, O.	Edgewood Nursery	Holmes	31
Fissel, F. A. & Bro., New Carlisle, O.	Silver Lake Nursery	Clark	134
Flohr, Manasses, New Springfield, O.	Pleasant Valley Fruit Farm	Mahoning	301
Ford Seed Co., The, Ravenna, O.		Portage	288
Forest Nursery & Lumber Co., The, W. D. Stem, Sec'y, Ashland, O.		Ashland	37
Fox, A. B., Greenspring, O.		Sandusky	328
Fox, John & Son, Covington, O.		Miami	55
Franklin Park Floral Co., The, Albert Knopf, Prest., Columbus, O.		Franklin	383
Frantz, C. & Sons, Cozaddale, O.	Cozaddale Nurseries	Warren	41
Frantz, E. B. & Co., Cedarville, O.	Tecumseh Nursery	Greene	65
Frantz, Israel & Son, R. R. 1, Springfield, O.		Clark	88
Freeman, Mrs. A. D. & Son, Phoneton, O.	Poplar Grove Nursery	Miami	258
Freeman, Isaac & Son, New Carlisle, O.	Honey Creek Nursery	Clark	109
French, A. B., Clyde, O.	The French Nursery	Sandusky	313
Friesner, J. D., R. R. 1, Lancaster, O.	Pleasant Ridge Nursery	Fairfield	3
Fry, John, Brandt, O.		Miami	174
Fulton, Harlen, R. R. 1, Gallipolis, O.		Gallia	152
Gantz & Harbaugh, Brandt, O.		Miami	171
Gantz, M. L., Brandt, O.		Miami	143
Gantz, Vesta, Brandt, O.		Miami	357
Geyer, J. L. & Son, Norwich, O.	Geyer's Nursery	Muskingum	222
Geyer, P. B., Norwich, O.		Muskingum	257
Gilland, C. S. & E. D. Midkifi, R. R. 1, Pomeroy, O.	Hemlock Grove Nursery	Meigs	149
Gillett, G. W., R. R. 4, Wellington, O.		Lorain	374
Gold & Evans, Gibisonville, O.	Gibisonville Nursery	Hocking	15
Gold Nursery Co., The, T. H. Gold, Mgr., R. R. 1, Pomeroy, O.		Meigs	150
Good & Reese Co., The, Springfield, O.		Clark	168
Grabiel, W. H., R. R. 3, West Mansfield, O.		Logan	7
Graves, W. J., Perry, O.		Lake	386
Greely, Dorcas, Sabina, O.		Clinton	282

Green, E. C. & Son, Medina, O.		Medina	72
Green, L. & Son Co., The, Perry, O.	Western Reserve Nursery	Lake	196
Green, L. E., R. R. 1, Sharon Center, O.	Granger Nursery	Medina	71
Guynn, Ellis L., Glenrose, O.	Glen Rose Nursery	Clermont	241
Guynn, William H., Moscow, O.	Fruit Hill Nursery	Clermont	372
Hagler, M. A., R. R. 6, Xenia, O.	Ridgeview Nursery	Greene	60
Halderman, J. W., Brandt, O.	Brandt Nursery	Miami	172
Hamblin, D. D., Perry, O.		Lake	204
Hamilton, William, Hendrysburg, O.		Belmont	355
Hanauer, Frank, Box 513, Dayton, O.		Montgomery	195
Harrington, William, Painesville, O.		Lake	129
Harris, Garrett, R. R. 3, Larue, O.		Marion	322
Harrold & Wertz, Dalton, O.	Pleasant Hill Nursery	Wayne	36
Hartley, Alonzo & Co., Troy, O.	Hillside Nurseries	Miami	280
Hartley, J. B., Quaker City, O.		Guernsey	235
Hathaway, Wick, Madison, O.		Lake	194
Hathorn, John, R. R. 2, Rome, O.	Brook Fruit Farm	Ashtabula	290
Hatten, H. C. & F. M., New Carlisle, O.	Gem Nursery	Clark	107
Haverland, B. H., Pleasant Run, O.		Hamilton	47
Haymaker, A. O., Kent, O.		Portage	294
Heade & Greider, Brandt, O.		Miami	142
Heffner, J. M., R. R. 5, New Carlisle, O.		Miami	175
Heikes, George, Tippecanoe City, O.		Miami	135
Hemm, George, Sidney, O.	Sidney Nurseries	Shelby	4
Herrick, D. R. & S. H., Station F, Cincinnati, O.	S. S. Jackson Nursery	Hamilton	42
Hickman, S. E., East Carmel, O.		Columbiana	268
Highland Avenue Nursery, The, Brooks Estate Props., Salem, O.		Columbiana	304
Hoag, I. W., R. R. 2, Berlin Heights, O.	Garden of Eden Fruit Farm	Erie	352
Hoffman, C. W., R. R. 1, Dayton, O.		Montgomery	184
Hoffman, L. F., R. R. 1, Dayton, O.	Stillwater Nursery	Montgomery	279
Hoover, C. F., Hardin, O.		Shelby	17
Horvath, M. H., 49 Houghton Ave., Glenville, O.		Lake	128
Huff, Edward, R. R. 4, Xenia, O.		Greene	62
Hull Brothers, Perry, O.		Lake	377
Humes, E. K., R. R. 4, Urbana, O.		Champaign	58
Hunt, Louis, R. R. 1, Rockwood, O.		Lawrence	117
Hutcheson, M. D. L., Englewood, O.		Montogmery	213
Hutchinson, Fred., Clyde, O.		Sandusky	325
Hutchison, John C., Barnesville, O.		Belmont	210
Jenkins, J., Winona, O.	Evergreen and Seedling Nursery	Columbiana	305
Johnson, F. H., Rocky Hill, O.		Jackson	21
Johnson, H. C., R. R. 8, Wilmington, O.		Clinton	25
Kaiser, Fred & Son, Athalia, O.		Lawrence	126
Kalb, George E., Rushville, O.		Fairfield	252
Keckler, S. B., R. R. 42, Union City, Ind.		Darke	49
Kelso, W. M., Box 99, Sabina, O.		Clinton	16
Kennedy Brothers, R. F. D., Middleport, O.		Meigs	158
King, Frank, R. R. 3, New Carlisle, O.		Clark	99
Kinney, Thomas, Greenspring, O.		Sandusky	327
Kinsey, William N., Kinsey, O.	Kinsey's Nursery	Montgomery	200
Knauf, Frank, Canfield, O.	Sunnyside Nursery	Mahoning	310
Knopp, Alvin B., R. R. 1, Columbiana, O.		Mahoning	302
Kohankie, Henry, Painesville, O.	Euclid Avenue Nursery	Lake	344
Kohankie, Martin, Painesville, O.		Lake	187

LIST OF OHIO NURSERYMEN—Continued.

Name and Address of Owner.	Name of Nursery.	County.	No. Certificate.
Kumler, H. L., Baltimore, O.		Fairfield	249
Kunkler, Nicholas, Bremen, O.		Fairfield	230
Kuth, J. S., R. R. 3, Richmond, Ind.	State Line Fruit Farm	Preble	203
Lambert, C. F., R. R. 1, Dayton, O.		Montgomery	201
Langdon, Amos, Howell, O.		Lawrence	111
Langdon, Wesley, Howell, O.		Lawrence	112
Langdon, W. E., Howell, O.		Lawrence	114
Lawrence, Edward S., R. R. 2, Perry, O.		Lake	236
Lawrence, W. R., Box 385, Marion, O.		Marion	354
Leffel, A. D., Springfield, O.		Clark	89
Lehman, S. J. & Co., R. R. 2, Osborn, O.	Enon Fruit Farm Nursery	Clark	108
Leonard, A. M., Piqua, O.	Zinnia Ridge Nursery	Miami	56
Linn, A. J., R. R. 3, Quaker City, O.		Noble	256
Livingston Seed Co., The, Robt. Livingston, Prest., 114 N. High St., Columbus.		Franklin	260
Lowery, J. P., Quaker City, O.		Noble	217
Lynd, E. T., Ryansville, O.		Lawrence	77
Lynd, James H., Ryansville, O.		Lawrence	74
Lynd, W. L., Ryansville, O.		Lawrence	78
Lynn, E. E., Salesville, O.		Guernsey	218
Lyons, J. R., Clarkson, O.		Columbiana	309
McBride, G. W., Box 526, Barnesville, O.		Belmont	373
McFarland, Earl, R. R. 1, Springfield, O.		Clark	90
McNary & Gaines, Xenia, O.	Xenia Star Nurseries	Greene	63
McNary, T. W., R. R. 3, Cambridge, O.		Guernsey	341
McVitty, James, Perry, O.	Ridgeview Nursery	Lake	206
Marker, Lawrence, Stelvideo, O.		Darke	54
Marshall & Long, Augusta, O.	Augusta Nursery	Carroll	369
Marshall, Sylvester & Sons, R. R. 5, Athens, O.		Athens	181
Marshall, S. M., Kensington, O.		Carroll	255
Martin, Albert S., R. R. 3, Ravenna, O.		Portage	287
Martin, Alexander, Ravenna, O.	Walnut Hill Farm	Portage	285
Martin, Horace, Elkton, O.		Columbiana	362
Martin, W. K., Horatio, O.		Darke	53
Maxey, F. E., R. R. 1., Xenia, O.		Greene	61
Meeks, W. R., 1369 Forsyth Ave., Columbus, O.		Champaign	361
Mercer, C. W., Elkton, O.		Columbiana	270
Merriman, B. F., Painesville, O.	Merriman's Nurseries	Lake	261
Meyers, Frank, R. R. 3, Geneva, O.		Ashtabula	292
Might, S. A., New Waterford, O.		Columbiana	306
Miller, D. J., R. R. 4, Millersburg, O.		Holmes	33
Miller, John F., White Oak, O.		Brown	234
Mitchell, W. T. & Son, Beverly, O.	Beverly Nursery	Washington	191
Mohawk Fruit & Preserving Co., The, G. M. Grau, Mgr., Lucas, O.		Richland	278
Montgomery, Cary W., R. R. 9, Newark, O.	Chestnut Hill Nursery	Licking	11
Mooney, E. K., Madeira, O.	Madeira Nurseries	Hamilton	123
Moore, Alexander, Barnesville, O.		Belmont.	299

Moore, James A., R. R. 1, Cheshire, O.		Gallia	394
Moore, Samuel R., 228 McIntire Ave., Zanesville, O.	Glenmoore Nursery	Muskingum	291
Morlan, M. B. & Sons, Rogers, O.		Columbiana	264
Morningstar Estate, The, T. J. Fleming, Executor, Greenville, O.		Darke	51
Morrison, A. D., R. F. D., Proctorville, O.		Lawrence	334
Morrison, J. R., Cadiz, O.	Cadiz Nursery	Harrison	318
Motter, Fred, Tippecanoe City, O.		Miami	136
Mox, Albert, Delphos, O.	Delphos Nursery	Van Wert	330
Muchmore, W. O., Box 101, Fremont, O.	Glenn Hill Nursery	Sandusky	356
Munnell, J. H., Ontario, O.		Richland	276
Musselman, W. L., New Carlisle, O.	Railroad View Nursery	Clark	125
Neal, Marion, Rock Camp, O.		Lawrence	83
Neff, J. P., R. R. 4, Dayton, O.		Montgomery	242
Nelson, Frank and Fred, Salem Center, O.		Meigs	163
Nichol, A. M., R. R. 3, Granville, O.	Orchard Park Nursery	Licking	12
Niemann, C. G., Port Clinton, O.		Ottawa	347
Noland, G. T., Wakatomika, O.		Coshocton,	320
Noland, J. P., Peninsula, O.		Summit	70
Noland, W. A., West Carlisle, O.		Coshocton	321
Norman, T. R., R. R. 1, Painesville, O.		Lake	239
Norris, J. A. & Co., Troy, O.		Miami	367
Notestein, J. B., Creston, O.		Wayne	35
Obert, R., R. R. 1, Helena, O.		Sandusky	338
Osbourne, W. R., R. R. 1, Baltimore, O.		Fairfield	248
Overholser, Jerry, R. R. 7, Xenia, O.		Greene	46
Parker, T. E., Barnesville, O.		Belmont	211
Parry, F. R. & Sons, Sarahsville, O.		Noble	190
Pearson, George, R. R. 3, Troy, O.	Maple Grove Nursery	Miami	121
Peckham, L. C., Perry, O.		Lake	237
Peters, George & Co., Troy, O.	Fairmount Nurseries	Miami	145
Peters, R. E., Gallipolis, O.		Gallia	127
Peters, W. J. & Co., Troy, O.	Ridge Avenue Nursery	Miami	147
Peters, W. J. & N. B., Troy, O.	Willow Lake Nursery	Miami	146
Pickett, G. S., Clyde, O.	Clyde Nursery	Sandusky	336
Plattner, Henry, St. Mary's, O.	St. Mary's Nurseries	Auglaize	329
Plum, D. S. & Louis Hileman, R. R. 1, Sullivan, O.		Ashland	73
Plumer, George, New Carlisle, O.		Clark	102
Plummer, D. P., R. R. 2, Bellefontaine, O.		Logan	6
Post & Cummings, Painesville, O.	Nickleplate Nursery	Lake	133
Quick, B. F., Geneva, O.		Ashtabula	293
Raby, William & Son, Millersburg, O.		Holmes	32
Ralston, S. R., R. R. 7, Mansfield,, O.		Richland	387
Rasor, George P., Wadsworth, O.		Medina	38
Rathbun, Bert, Clyde, O.		Sandusky	335
Reed, J. A., Box 237, Canton, O.	Canton Nurseries	Stark	298
Reeves, E. A., Station B, Cleveland, O.	Lakeview Nursery	Cuyahoga	97
Reichenbach, John, 892 E. Main St., Columbus, O.		Franklin	363
Rhynard, Thomas T., Hagerman, O.		Darke	27
Rice, James M., Fremont, O.	Riverside Fruit Farm	Sandusky	339
Richards, George H., R. R. 1, Baltimore, O.		Fairfield	250
Richey, L. L., Pataskala, O.		Licking	9
Richey, W. T., Mooresville, Ind.		Licking	10
Rifile & Deeds, Ansonia, O.	Ansonia Nurseries	Darke	26
Riley, J. N., Washington, C. H., O.	Fayette Nursery	Fayette	59

LIST OF OHIO NURSERYMEN—Concluded.

Name and Address of Owner.	Name of Nursery.	County.	No. Certificate.
Robinson, R. N., R. R. 3, Sidney, O.		Shelby	18
Rocky, J. W., Miamisburg, O.		Montgomery	385
Rocky River Nursery, The, Mesh Cassel, Mgr., Clifton Park, O.		Cuyahoga	122
Rogers, L. S., R. R. 2, Bowling Green, O.	Silverwood Fruit Farm	Wood	349
Rogers, Marshall H., Jamestown, O.	White Oak Fruit Farm	Greene	64
Rose, John, Clyde, O.		Sandusky	360
Rose, Lucius, 418 Vine St., Akron, O.		Summit	284
Rothwell & Co., New Waterford, O.		Columbiana	307
Royer, George W., Columbiana, O.		Mahoning	303
Rutherford, M. J., Langsville, O.		Meigs	160
Sage, J. M., Chardon, O.		Geauga	295
Sawyer, Frank, Norwalk, O.	Norwalk Nursery	Huron	140
Scarff, W. N., New Carlisle, O.		Clark	177
Schmeltzer, Anthony, R. R. 1, Bremen, O.		Hocking	229
Schramm, Charles, Athalia, O.		Lawrence	281
Schwartzwalder, M. & Son, Pomeroy, O.	Pomeroy Nursery,	Meigs	148
Schweitzer, W., Pandora, O.		Putnam	275
Shaffer Brothers, Cridersville, O.	Shawnee Nursery	Allen	371
Shafford, Ward, Tippecanoe City, O.	Shafford Fruit Farm	Miami	138
Shaner, W. R., Cutler, O.	Plymouth Nursery	Washington	192
Sheff, W. A., Proctorville, O.		Lawrence	115
Shields, J. H., Wapakoneta, O.	Wapakoneta Nursery	Auglaize	332
Shockey, H. W., R. R. 4, New Carlisle, O.		Clark	105
Shugg, Peter, Dearing, O.		Lawrence	390
Siebenthaler, John, R. R. 1, Dayton, O.		Montgomery	188
Simmons Nursery Co., The, Simmons & Burton, Props., Casstown, O.		Miami	120
Simpkins, H. S. & Sons, Lindenville, O.		Ashtabula	296
Slaughter, Jacob, Osborn, O.		Greene	186
Smith, Dan, Kyger, O.		Gallia	153
Smith, Henry, R. R. 4, St. Paris, O.		Champaign	57
Smith, H. W., Kingman, O.		Clinton	345
Souders, W. S., East Carmel, O.	Highland Fruit Farm	Columbiana	269
Stackhouse, B. F., Lisbon, O.	Mt. Pleasant Small Fruit Farm	Columbiana	311
Stackhouse, Jesse, & W. W. Hawkins, Kensington, O.		Carroll	254
Starbuck, Addison, Colerain, O.	Colerain Nursery	Belmont	358
Steed, C. L., R. R. 1, Ironton, O.		Lawrence	86
Stein, S. F., Zanesville, O.		Muskingum	220
Stephens, A. P., Perry, O.		Lake	240
Stockman, E. G., Prospect, O.		Marion	314
Storrs & Harrison Co., The, Painesville, O.	Painesville Nurseries	Lake	189
Stout, H. E., R. R. 3, Coolville, O.	Carthage Nursery	Athens	333
Strawther, James, Urbana, O.		Champaign	388
Stuckman, A. A., R. R. 6, Bucyrus, O.	Crawford County Nursery	Crawford	324
Sutton, John H., R. R. 1, Sheridan, O.		Lawrence	185
Swably, Gustus, Tiffin, O.		Seneca	273
Swick, W. C., Bremen, O		Fairfield,	213

Swisher, Eli, Kyger, O.		Gallia	154
Taggart, J. W., Donnelsville, O.		Clark	104
Taggart, W. I., R. R. 4, New Carlisle, O.		Clark	101
Templin Co., The, Calla, O.		Mahoning	364
Thompson, J. E., Ryansville, O.		Lawrence	79
Tingley, Charles B., R. R. 2, Mansfield, O.		Richland	277
Toland, T. C., Calcutta, O.		Columbiana	312
Trainer, Mathew & Sons, R. R. 1, Zaleski, O.	Lone Star Nursery	Vinton	19
Trout, E. A., R. R. 2, Centerburg, O.		Licking	14
Turner, D. L., R. R. 1, Dexter, O.		Meigs	165
Turner, W. E., R. R. 1, Dexter, O.		Meigs	166
Uhrig, Leonard, Dayton, O.		Montgomery	224
Uhrig, Peter, Jr., New Carlisle, O.		Clark	100
Upland Nurseries, The, H. J. L. Frank, Mgr., Wheeling, W. Va.		Belmont	214
Vandervort, J. M. & Son, R. R. 7, Wilmington, O.	New Antioch Nursery	Clinton	24
Viers, M. F., Tallmadge, O.		Summit	379
Walker, S. F., Georgetown, O.	Georgetown Nursery	Brown	233
Walters, A. W., R. R. 2, Port Clinton, O.		Ottawa	348
Webb, J. H., Essex, O.		Lawrence	84
Webb, T. O. & Son, Essex, O.		Lawrence	85
Webster, Mrs. S. R., R. R. 1, Rock Creek, O.	Rose Cottage Nursery	Ashtabula	291
Welch, Mark, R. R. 1, Painesville, O.		Lake	244
Wellman, George, New Knoxville, O.		Auglaize	378
Weltz's Sons, Leo, Wilmington, O.	Wilmington Nursery	Clinton	23
West Brothers, Perry, O.		Lake	243
West, T. B., Perry, O.	Maplebend Nursery	Lake	245
Westfall, E. & Sons, Pointrock, O.		Vinton	167
Westfall, M. C., Dundas, O.	Ohio Nursery	Vinton	20
Whitacre, Thomas L., East Rochester, O.		Columbiana	253
Whitney, C. L., Warren, O.	Evergreen Nursery	Trumbull	289
Wilcox, C. H., Barnesville, O.		Belmont	209
Wilhelmy, Chris, 1711 Pearl St., Cleveland, O.	Forest City Nursery	Cuyahoga	381
Williams, B. F., Rock Camp, O.		Lawrence	82
Williams, E. C., Zanesfield, O.		Logan	8
Williams, John S., R. R. 2, Orwell, O.		Trumbull	392
Wilson, Emmet, Dyesville, O.		Meigs	161
Wilson, Guy C., Barnesville, O.		Belmont	208
Winslow & McDonald, Tiverton, O.	Tiverton Nurseries	Coshocton	29
Winterich, Christ., Defiance, O.	Winterich Nursery	Defiance	331
Winters, G. W., Ryansville, O.		Lawrence	182
Wolf, A. W. & K. J., R. R. 1, Trimble, O.		Morgan	353
Wolf, Fred, R. R. 1, Dayton, O.	Sugar Grove Nursery	Montgomery	199
Wolfe, L. B., New Carlisle, O.		Clark	98
Wollam Nursery Co., The, Layland, O.		Coshocton	30
Woods, John H., Dearing, O.		Lawrence	81
Worman, Frank T. & Co., Troy, O.		Miami	391
Wright Brothers, Langsville, O.		Meigs	159
Wyss, Daniel, New Philadelphia, O.	New Philadelphia, Nursery	Tuscarawas	317
Yetter, Charles, Clyde, O.		Sandusky	366
Zettler Co., The, Canton, O.		Stark	337
Ziegenfelder, J. B., Troy, O.		Miami	119
Zincks, Christopher, Brandt, O.		Miami	176

Total 394.

AGENTS FOR NURSERY STOCK IN OHIO.

In this list are given the names of nurseries, followed by the names of the agents who have filed sworn statements, according to law.

The Allen Nursery Company, Rochester, N. Y.
D. E. Van Tilburgh.

Augustine and Company, Normal, Ill.
H. H. Melick.

Peter Bohlender and Son, Phoneton, O.
Charles Schrader.

M. L. Carr and Sons, Yellow Springs, O.
J. F. Caves.
C. L. Persinger.
C. M. Wilson.
Frank Sears.
B. Z. Spriggs.

H. J. Champion, Perry, O.
L. C. Sprinkle.

The Chase Brothers' Company, Rochester, N. Y.
R. E. Abbott.
William L. Atkinson.
Elijah Bowen.
J. A. Carpenter.
Aquilla Carr.
John N. Cook.
James M. Davis.
O. P. Frees.
Elam Gibbons.
A. W. Hall.
Morris Henshaw.
Alexander Hukill.
K. M. Koons.
William P. Lewis.
J. W. Logan.
L. Lukemire.
Joseph S. Metzner.
William G. Moffet.
W. M. Morrow.
C. G. Robinson.
H. H. Sandoe.
Joseph R. Short.
P. B. Strobel.
William P. Stukey.
Henry Swaisgood.
J. M. Swartwont.
W. E. Tanner.
Frank L. Traphagen.
George O. Wellman.
J. H. Woodmansee.
Thomas A. Woods.

The G. A. Costlich Company, Rochester, N. Y.
Christian Kloepfer.

John Day, Fremont, O.
J. C. Vollmer.

The Farmers' Nursery Company, Tippecanoe City, O.
E. E. Mumma.

E. B. Frantz and Company, Cedarville, O.
M. B. Johnston.

A. B. French, Clyde, O.
Samuel Bare.
J. H. Brown.
S. V. Haigh.
L. C. Kinley.

Glen Brothers, Rochester, N. Y.
A. R. Hunt.

The Greening Brothers' Nursery Company, Monroe, Mich.
Gustavus Berthold.
John Bettschen.
John Blondel.
B. L. Broderson.
G. W. Correll.
S. B. Donel, Sr.
John Esselbach.
C. Fahl.
Charles D. Gibson.
William S. Hall.
J. M. Murray.
John S. Neuschwander.
J. A. Raby.
Daniel W. C. Rau.
J. P. Shirley.
Phil. Smith.
Jackson Underhill.

The M. H. Harman Company, Geneva, N. Y.
H. F. Fink.
John D. Malloy.

G. H. Havekost, Monroe, Mich.
N. Boehm.

J. K. Henby and Son, Greenfield, Ind.
William Robb.
William O. Walton.

The I. E. Ilgenfritz Sons Company, Monroe, Mich.
John F. Barr.
Roland L. Clements.
C. A. Current.
S. O. Daugherty.
Myron O. Ford.
V. S. Haller.
William Lau.
C. W. McColley.
Jos. McCurdy.
W. H. Pitsnaugle.
Lewis Ruch.
Ferdinand Schmidt.
J. M. Sechrist.
Barney P. Shepler.
Henry L. Snavely.
Charles Thorman.
J. A. Wilber.
Ed. Wilcox.
J. L. Yohe.

The Kalamazoo Nurseries, Kalamazoo, Mich.
J. E. Brown.
John Clark.
G. W. Dorsey.
George Evans.
W. H. Few.
Harry Hatcher.
J. W. Logan.
W. W. Putt.
C. N. Seward.
T. R. Taylor.
J. H. Young.

R. D. Luechford and Company, Rochester, N. Y.
W. P. Hempfield.

A. J. McGraw, Geneva, N. Y.
B. F. Prickett.
Josephus Ramsey.

The Michigan Nursery Company, Monroe, Mich.
W. H. Pitsnaugle.

The Perry Nursery Company, Rochester, N. Y.
Rate Hosack.

The Phœnix Nursery Company, Bloomington, Ill.
U. G. Owens.

G. S. Pickett, Clyde, O.
Elmer Cole.
A. M. Friedley.
George L. Marriott.

Joseph W. Schuette and Company, St. Louis, Mo.
James Stermer.

The Stark Brothers Nurseries and Orchards Company, Louisiana, Mo.
Robert Wylie.

H. S. Taylor and Company, Rochester, N. Y.
H. C. Bayliff. John W. Taylor.

The Washington Nursery Company, Detroit, Mich.
T. H. McConkey.

The Western New York Nursery Company, Rochester, N. Y.
T. T. Collins.

DEALERS IN NURSERY STOCK IN OHIO.

The following list gives the names and addresses of dealers in nursery stock who have filed sworn statements as required by law, also the names of the nurseries from which the stock was obtained.

William Bebb, Rockdale Ave.. Cincinnati, O.
  Stock from M. W. Allen, Cincinnati, O. (nursery formerly owned by S. W. Mooney, Madeira, O.)
D. W. Beckley, Richwood O.
  Stock from George Hemm, Sidney, O.
    John Siebenthaler, Dayton, O.
    Reliance Nursery Co., Geneva, N. Y.
    George S. Josselyn, Fredonia, N. Y.
The Zack Davis Co., Delaware, O.
  Stock from The Storrs and Harrison Co., Painesville, O.
John Esselbach, Put-in-Bay, O.
  Stock from T. S. Hubbard & Co., Fredonia, N. Y.
Gabriel Izer, R. R. 2, Farmersville, O.
  Stock from John Siebenthaler, Dayton, O.
Charles F. Hanna, 1333 Woodland Ave., Cleveland, O.
  Stock from the Storrs and Harrison Co., Painesville, O.
M. O. Harmon, Prospect, O.
  Stock from McNary and Gaines, Xenia, O.
    The Storrs and Harrison Co., Painesville, O.
Joseph Litzenberg, Findlay, O.
  Stock from W. B. Cole, Painesville, O.
John Mickelsen, 42 Euclid View Ave., Glenville, O.
  Stock from W. B. Cole, Painesville, O.
    Henry Kohankie, Painesville, O.
Joseph Ratterman, Sidney, O.
  Stock from Augustine and Co., Normal, Ill.
    George Hemm, Sidney, O.
Philip U. Rice, Wooster, O.
  Stock from G. N. Mayer, Laketon, Ind.
    The Storrs and Harrison Co., Painesville, O.
David F. Shimp, Lyndon, O.
  Stock from J. G. Harrison and Sons, Berlin, Md.
    Leo Weltz's Sons, Wilmington, O.
T. B. Stone, Lorain, O.
  Stock from The L. Green and Son Co., Perry, O.
    T. S. Hubbard Co., Fredonia, N. Y.
    The Storrs and Harrison Co., Painesville, O.
    Eugene Willett, North Collins, N. Y.
George Oscar Wellman, Defiance, O.
  Stock from Kalamazoo Nurseries, Kalamazoo, Mich.
    First National Nurseries, Rochester, N. Y.

Board of Live Stock Commissioners.
PAUL FISCHER,
STATE VETERINARIAN.

W. W. MILLER,
SECRETARY.

STATE BOARD OF AGRICULTURE ORGANIZED 1846

J. W. FLEMING,
ASS'T SEC'Y.

Division of Nursery and Orchard Inspection.
A. F. BURGESS,
CHIEF INSPECTOR.

STATE OF OHIO
DEPARTMENT OF AGRICULTURE
LIVE STOCK COMMISSIONERS.

ANNUAL REPORT OF THE STATE BOARD OF LIVE STOCK COMMISSIONERS OF OHIO.

To His Excellency, Myron T. Herrick, Governor of Ohio:

Sir:—The State Board of Live Stock Commissioners has the honor to submit herewith its third annual report, containing a general statement of its transactions from November 2, 1903 to and including November 7, 1904 together with an appendix containing the laws relating to live stock and to the board of live stock commissioners, rules and regulations adopted by the present board, and other matters of interest relating to the work of the Board.

Two changes in the membership of the Board occurred during the year, Messrs. L. P. Bailey and E. L. Lybarger succeeding Messrs. Jonas S. Stuckey and Benjamin P. Baldwin, whose terms expired in January, 1904.

The first regular meeting of the Board was held March 2, 1904. All members except Messrs. Cromley and Miller, whose absence was occasioned by sickness, were present.

The principal business transacted at this meeting was the consideration of a special report of the Veterinarian on the discovery of glanders in Brown and Adams counties.

After a thorough discussion of the report, the following was adopted:

It appearing to the Board that there is existing in Brown and Adams counties, state of Ohio, among the live stock of the state, a dangerous, contagious and infectious disease known as glanders; and it further appearing to said Board of Live Stock Commissioners that many horses in said counties are affected by such disease, at least fifteen in number, and whereas said animals so affected have been examined by a competent veterinarian in the employ of this Board, to wit: Dr. Paul Fischer, the State Veterinarian, and his assistant, Dr. M. B. Lamb, who report said disease to be a dangerous and contagious malady, and it being the opinion of this State Board of Live Stock Commissioners that in order to prevent the further spread of such dangerous, contagious and infectious disease among the live stock of the state, it is necessary that such animals be killed.

It is, therefore, hereby ordered that such animals, after being duly appraised, as provided in section 4211-16 of the Revised Statutes of Ohio, be killed; and it is further ordered that Dr. Paul Fischer, the State Veterinarian, without unnecessary delay, kill, or cause to be killed, the following animals so found to be affected with glanders, and to cause their carcasses to be buried or burned:

One gray mare, owned by J. W. Trout, Feesburg, Brown county, Ohio.

One bay gelding, owned by J. C. Trout, Feesburg, Brown county, Ohio.

One bay mare, owned by Herman Seidel, Georgetown, Brown county, Ohio.

One sorrel mare, owned by Herman Seidel, Georgetown, Brown county, Ohio.

One gray colt, owned by Thomas Andrews, Georgetown, Brown county, Ohio.

One bay gelding, owned by Thomas Andrews, Georgetown, Brown county, Ohio.

One bay gelding owned by Al. Masterson, Georgetown, Brown county, Ohio.

One bay mare, owned by Andrew Fite, Blue, Creek, Adams county, Ohio.

One sorrel gelding owned by Andrew Fite, Blue Creek, Adams county, Ohio.

One gray gelding, owned by Jackson Cooper, Blue Creek, Adams county, Ohio.

One brown mare, owned by Frank Ross, Blue Creek, Adams county, Ohio.

One sorrel gelding, owned by Green N. Teachnor, Decatur, Brown county, Ohio.

One dun gelding, owned by Mrs. Sarah Parks, Blue Creek, Adams county, Ohio.

One gray gelding, owned by Louis Ogden, Blue Creek, Adams county, Ohio.

One gray mare, owned by Louis Ogden, Blue Creek, Adams county, Ohio.

Mr. Hinsdale submitted the following, which was adopted:

It being the opinion of the State Board of Live Stock Commissioners that glanders is a dangerous, contagious and infectious disease, and that any animal, or animals, affected by such disease are incurable, and that when any animal, or animals, are so affected by such disease it is necessary, in order to prevent the spread of such dangerous, contagious or infectious disease among the live stock of the state, to destroy such animal, or animals; it is therefore ordered that whenever the State Veterinarian, in the employ of the Board of Live Stock Commissioners, upon examination shall find and so report that any animal, or animals, are affected by such dangerous and contagious malady, that said veterinarian shall kill, or cause to be killed, such animal, or animals, and their carcasses to be either burned or buried; and in the event that such animal, or animals, are destroyed, such animal, or animals, shall be appraised, as provided by section 4211-25, R. S.

It is further ordered that any animal, or animals, affected with glanders, and found to be so affected, by the State Veterinarian in the employ of this Board, shall be quarantined, and any member of such Board is hereby authorized to order such animals in quarantine and order the premises or farms where such disease exists to be quarantined.

Such quarantine may be under the supervision of the State Veterinarian, or a member of the Board, or other person duly authorized by said Board, or by a member thereof.

At subsequent meetings of the Board, brief reports of the Veterinarian were submitted for consideration and such action taken as the reports called for.

The diseases that have been investigated, and to which time has otherwise been devoted, are as follows:

Among Horses: Glanders, mange, coital exanthema and dourine, rabies (hydrophobia), mould poisoning, strangles (distemper), influenza, malignant tumors, azoturia, etc.

Among Cattle: Tuberculosis, mange, rabies, Southern cattle fever (Texas fever), actinomycosis (big jaw), infectious keratitis (sore eyes), anthrax, lice, Tinea (ring worm), digestive disorders, etc.

Among Sheep: Nodular disease (Oesophagostoma Columbiana) and scab.

Among Swine: Rabies, hog cholera and swine plague.

Among Dogs: Rabies.

Among Fowls: Cholera, roup and rabies.

Most of the time of the Veterinarian, and funds at the disposal of the Board, have been devoted to the control and eradication of glanders among horses. During the year twenty-eight horses and mules affected with glanders have been destroyed by order of the Board, the total for the past two years being sixty-one. These animals were appraised at five thousand and sixty-two dollars and fifty cents ($5,062.50).

In the state of Massachusetts, with only about one fifth as many horses as there are in Ohio, fifteen hundred and ninety-seven horses affected with glanders were destroyed by the Massachusetts Cattle Bureau, during a similar period (1902 and 1903).* A moderate estimate of the value of these animals is given at one hundred and twenty, to one hundred and thirty thousand dollars! Our actual losses, as far as figures at the disposal of the Board are concerned, are less than seven thousand dollars, for approximately the same period. This is a most gratifying condition and no effort should be spared to maintain it.

Glanders is constantly being imported from other states through the shipment of infected horses. Without proper control of the disease, which means the strict enforcement of wise sanitary measures, it would be only a question of time, and not a long time, when glanders would be just as prevalent in Ohio as in some other states, and even more so, because the states referred to are spending vast sums of money, annually, for its suppression. In Ohio we have every advantage in having comparatively healthy stock to begin with, but the opportunity to preserve this condition should not be neglected.

The appropriations at the disposal of the Board for carrying on the work assigned to it under the law, for the past three years, were, and are, insufficient. It is hoped that the next legislature will provide sufficient funds so that at least such work can be done as seems absolutely necessary to guard against the possible introduction of dangerous infectious diseases from other states. This refers not only to glanders in horses, and to mange, which has been the cause of some expense to the Board during the past year, and to such other diseases as already exist within our borders, but to exotic diseases as well. Every dollar appropriated for live stock sanitary work would be repaid the state a thousandfold in checking the ravages of disease, and in creating that feeling of security which attends a knowledge of protection against certain dreaded plagues. Although the farmer and the live stock owner are more directly affected by the condition of the health of our domestic animals than others, still every citizen of the state is interested in the improved quality of animal food products and their greater freedom from undesirable disease germs, which result from better sanitary conditions.

Fortunately, even under the present cramped financial condition, the general willing co-operation of live stock owners has enabled the Board to accomplish a great deal of good and effective work.

The enforcement, by the Board, of certain necessary regulations such, for example, as the destruction of a horse, or team of horses, which often represent the entire capital of a man, and his only means of providing bread for a family, is not a wholly pleasant duty, nor is it an easy matter to convince him that his horse, with no conspicuous symptom of disease, is a very dangerous animal. He cannot understand that such an animal may continue to live in apparently the same condition of general health for many months, or even several years, and during that time be the cause of the spread of this fatal disease to his other horses, or to those of his neighbor. The insidious nature of glanders in the horse makes the disease more difficult to deal with than almost any other. Live stock sanitary measures, to be effective and of value, must be absolutely thorough. For the successful control of glanders, nothing short of this will do. This requires the examination of every exposed animal that can possibly be located and, in certain cases, animals must be placed under prolonged quarantine. Such measures often seriously interfere with the owner's occupation and means of making a living. If the owner is ignorant, or uninformed, which is sometimes the case, the measures of the Board seem unjust and unwarranted. At the same time the neighbor of such a man has a right to demand protection for his stock.

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*Second and Fourth Semi-annual Reports Massachusetts Cattle Bureau, 1903 and 1904.

Fortunately, the liberal and highly commendable policy of the legislature, in the past, that of paying the unfortunate owners of these animals for their losses, together with the very general hearty co-operation of the owners of horses and other live stock, has enabled the board to accomplish what it has, though not without a few unpleasant occurrences. In two instances, for example, it has become necessary to resort to the courts to carry out orders of the Board, both in Brown county.

The first case was that of an owner of several horses and mules; it was learned that among these animals there was one, a gray colt, that had been shipped from Columbus, Montana, with about one hundred and twenty-five other Western horses, of which many were affected with glanders. An investigation by the Veterinarian developed that this colt, and another horse kept in the same stable, were affected with the same disease, in the chronic stage. Owing to the resistance met in carrying out the order of the Board, viz., the destruction of the affected animals, after they had been duly appraised as provided by law, and their secretion by the owner at a later date, legal proceedings, to enforce the order, were begun. Before the case was settled, by the agreement of the owner to give up his horses and permit their destruction, the disease had become so far advanced in one of the animals that he killed it voluntarily, and a third animal (a mule which had been exposed to the affected horse) contracted the disease and had to be destroyed.

Thus this man learned a valuable lesson which cost him two horses, a mule and a law suit. He is now convinced that chronic glanders is a disease that may at any time become acute and terminate in death, besides infecting other animals that may be kept in the same stable.

The second case referred to, in which it became necessary to resort to the courts for aid in carrying out the provisions of the law, occurred in the same locality and is still pending.

On the whole, however, the work of the Board progresses smoothly. This is as it should be, since the interests of the Board are those of the owner of live stock as well as the public in general. Willing co-operation of the stock owner and shipper, and of railroad and transportation companies, with the Board, is the rule.

The amount of funds at the disposal of the Board for carrying out its object, namely, "the promotion and protection of the live stock interests of the state and the prevention of the spread of infectious and contagious diseases among domestic animals and the extirpation of the same, etc." (live stock valued at over one hundred and twenty millions of dollars) is the only serious hindrance to the normal development of the work.

For the two years beginning February 15, 1904, the total appropriations for the use of the board in carrying on its work, amount to ten thousand, two hundred and thirty dollars and nine cents. Four thousand, two hundred and thirty dollars and nine cents of this sum being a special appropriation for the payment for glandered horses and other animals destroyed by the Board, thus leavng only three thousand dollars a year for carrying on the operations of the Board, paying salaries, traveling expenses of the Veterinarian, etc.

The sums appropriated by the legislatures of other states which, with only one or two exceptions, have a live stock valuation that is much below that of Ohio, would be interesting in this connection. The Live Stock Sanitary Board of Illinois has an annual appropriation of ten thousand dollars; the Cattle Bureau of Massachusetts, ninety-four thousand, two hundred and eighty-seven dollars; Minnesota appropriates nineteen thousand dollars annually for this work; Montana, eighteen thousand dollars; New Mexico, thirty-five thousand dollars, with a live stock valuation just one twelfth as large as that of Ohio; New York, twenty thousand dollars; North Dakota, eighteen thousand dollars; Missouri, nineteen thousand dollars; Pennsylvania, fifty-seven thousand, five hundred dollars; Oklahoma, eight thousand, two hundred dollars; Texas, thirteen thousand dollars, and Rhode Island, twenty thousand dollars.

The live stock industry of Ohio can be compared with that of only one of the states mentioned, namely, Pennsylvania. An appropriation of fifty thousand dollars, for live stock sanitary work in Ohio, would be the very least that would enable the board to do work of the character of that which is being done in the state of Pennsylvania today, and where its benefits are being reaped by every citizen of that state.

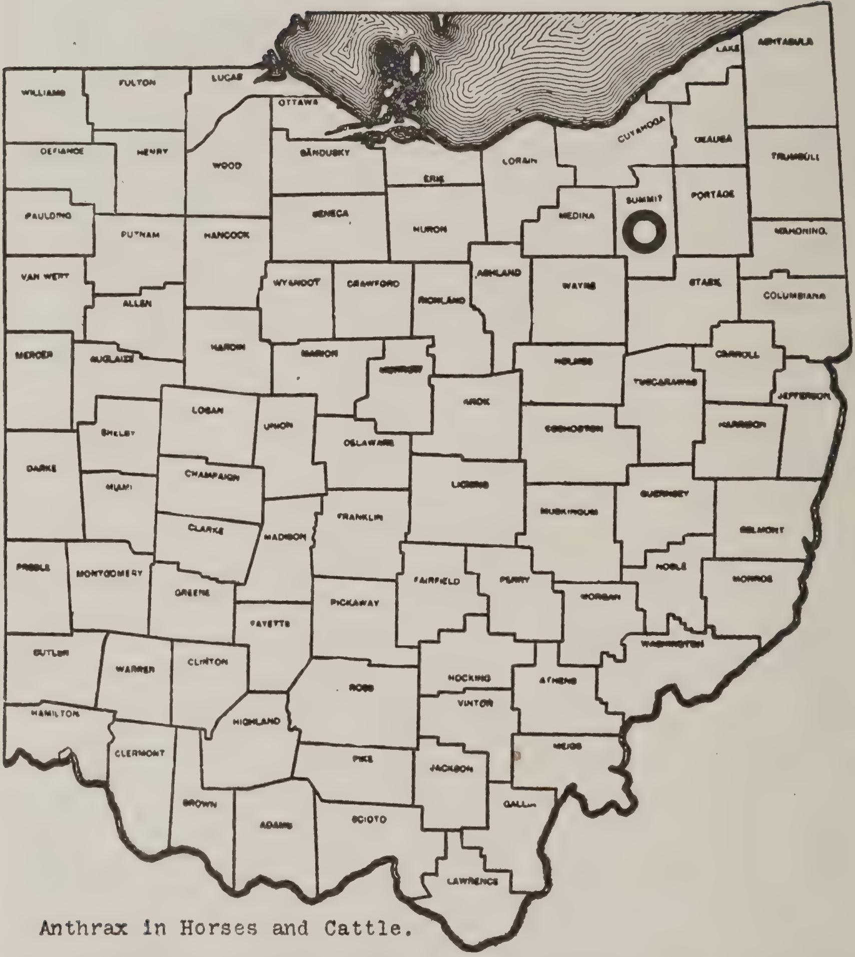
The great problems that are presented by the existence of tuberculosis in dairy cattle and hog cholera and swine plague among swine have been much neglected on account of the lack of funds.

It is hoped that the following report of the work done toward the control of the diseases occurring in the state, and those exotic diseases that are liable at any time to be introduced, will show the wisdom of increasing the funds at the disposal of the Board to such an extent as the great live stock industry of our state deserves.

On the following pages will be found general outlines of the work accomplished by the Board toward the control and extirpation of the various dangerous contagious and infectious diseases of domestic animals. For the more important diseases maps have been prepared to show the extent of their prevalence as far as they have come under the observation, or to the knowledge, of the board. For the sake of convenience in referring to them, they have been arranged alphabetically, irrespective of their importance, or of their occurrence in different species of animals.

ANTHRAX

In Horses and Cattle.



Anthrax in Horses and Cattle.

Map showing only point in Ohio (Summit County) where Anthrax in Horses and Cattle is known to have occurred. (August 1903).

Several reports of outbreaks of anthrax were received during the year, but investigation by the Veterinarian proved all of them to be unfounded. For more than a year not a single case of anthrax has come to the notice of the Board. The importance of a knowledge of the distribution of the disease and of the localities in which it is most likely to reappear, make it seem advisable to repeat what was said on this subject in the last annual report.

"During the past year (1903) the appearance of true anthrax has for the first time been observed in the state. This is true at least in as far as any accessible records are concerned. Anthrax is one of the most dangerous of all known diseases. It affects all domesticated, and most wild, animals, as well as human beings, and generally terminates fatally. These facts alone emphasize the importance of a careful control of this disease.

"It seems that Ohio has been peculiarly fortunate in thus far having been free from anthrax. However, this is probably true in a restricted sense only. Anthrax is found in all parts of the world and very few countries are free from it. Nothing definite can be said of its distribution in the United States, but the following, quoted from the report of the Bureau of Animal Industry of the United States Department of Agriculture (1901), will be of interest: 'Arkansas, Louisiana, Mississippi and Texas have lost millions of dollars worth of horses, mules, cattle, and other animals, and an undetermined number of human beings from this disease (anthrax). Other states, among them Pennsylvania, New York, Illinois, Wisconsin, and the Dakotas, have suffered to a greater or less extent, etc.'

"The following is from the same report: 'There are certain regons where the disease seems to be indigenous, as on the alluvial soils of portions of the southern part of the Mississippi Valley, where it apparently develops when the conditions of the soil and climate are favorable. There are, however, other outbreaks which occur as a result of importing the contagion with hides, hair, wool, etc.'

"The origin of the disease in Ohio has not yet been determined and possibly never will be. It is probable, however, that there exist in this state certain areas of infection, especially in the less improved (undrained) portions of the country, and that the disease may crop out again and again in restricted areas. The duty of the state would be to make careful observations, with a view to locating these dangerous areas and then guarding them carefully. In 1902 a herd of cattle that had been exposed to this disease in Kentucky, was held in quarantine in Columbus, but none of the animals developed the disease. They were finally slaughtered.

"The outbreak of anthrax in 1903 occurred on the farm of John Henry, near Hudson, Ohio. On August 12th, Mr. Henry called on Dr. Fischer, who was at that time continuing the investigation of glanders among the horses of Lorain. Mr. Henry reported the loss of one horse and six cattle (five steers and one cow), from a disease that was suspected to be anthrax.

"The statement of the owner, however, that his cattle had been in a cornfield on the night before the death of the first steer, and had helped themselves liberally to green corn, made it appear possible that the latter might have been the cause of the deaths. For this reason, Mr. Henry was advised to procure the services of Dr. C. B. Frederick, of Canton, to make a preliminary examination and report results.

"On the 13th (the next day) Dr. Frederick went to Hudson and visited Mr. Henry's farm. He reported three steers sick with symptoms that resembled those of anthrax. He removed some blood from the jugular vein of one of these animals and submitted it to Dr. Geo. F. Zinninger, a physician of Canton, for microscopic examination. Dr. Zinninger reported that cover-glass preparations from the blood thus obtained, and that cultures from the same blood, showed the presence of anthrax bacilli. One of the cultures prepared by Dr. Zinninger was turned over to the Veterinarian of the Board, and with this a Belgian hare was inoculated. Death resulted from anthrax on the third day. A microscopic examination of the blood of this hare and the cultures of anthrax bacilli that were obtained from its blood clinched the diagnosis.

"As soon as the diagnosis 'anthrax' had been made, the necessary steps for controlling the disease were taken. The owner was instructed to remove the remaining animals from the pasture in which the disease appeared and to isolate them in a safe place. This was done, but not before two more steers became affected with the disease. None of these died, however.

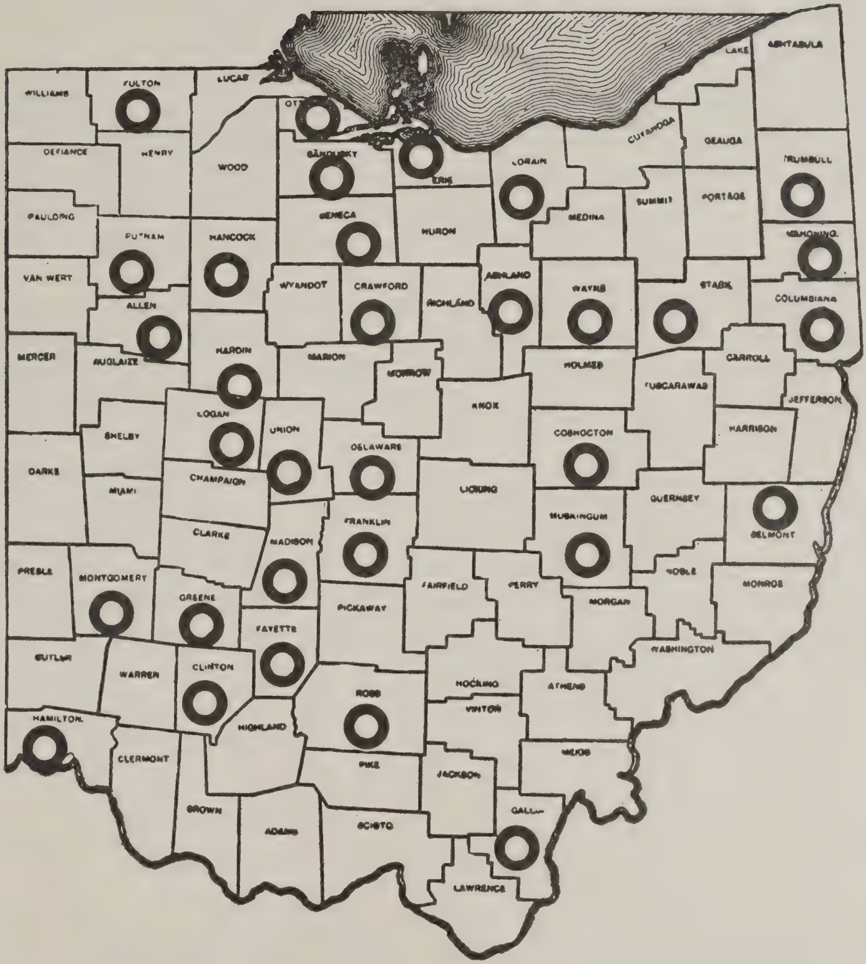
"It was proposed to protect the remainder of the herd by inoculating the animals with a weakened culture of the anthrax bacillus, according to the method first employed by Toussaint and later improved by Pasteur. On account of the difficulty experienced in obtaining this material, some time elapsed before the inoculations could be performed, and no more deaths having occurred in the herd in the meantime, the owner preferred not to have anything further done, and the matter was permitted to rest for the time being. It is now proposed to observe this and adjoining farms carefully and at the first indication of further outbreaks resort to effective repressive measures immediately."

It is now fifteen months since the last appearance of the disease has been observed by the Board.

ACTINOMYCOSIS.

(Big Jaw, Lump Jaw)

In Cattle.



Actinomycosis: Map showing counties from which the disease
(Lump Jaw). has been reported during the past year.

As shown by the above map, actinomycosis (big jaw, lump jaw) occurs in almost all parts of the state, although to a limited extent only. The fact that an effective remedy has been found to treat this disease, in its early stages, makes it of less importance, from a "sanitary police" point of view, than formerly. Actinomycosis occurs in human beings, but the danger of direct infection from affected animals, if it occurs at all, must be very slight.

The cause of the disease is a vegetable parasite related to the bacteria Actinomyces bovis, which grows on various grains and grasses, but notably on the heads of barley. With the peculiarly constructed awns of this plant, which work their way into the tissues of the animal, sometimes through previously existing wounds, this parasite gains a foothold and, by further development as a true parasite, produces the tumors characteristic of the disease.

Animals affected with lump jaw should be put under the care of a veterinarian. As far as the use of the meat from affected animals, with local forms of the disease, is concerned, although it cannot be said that any great danger attends its use as food, the practice is attended with the same objections as is the use of meat from animals suffering from any other disease, and should therefore not be encouraged.

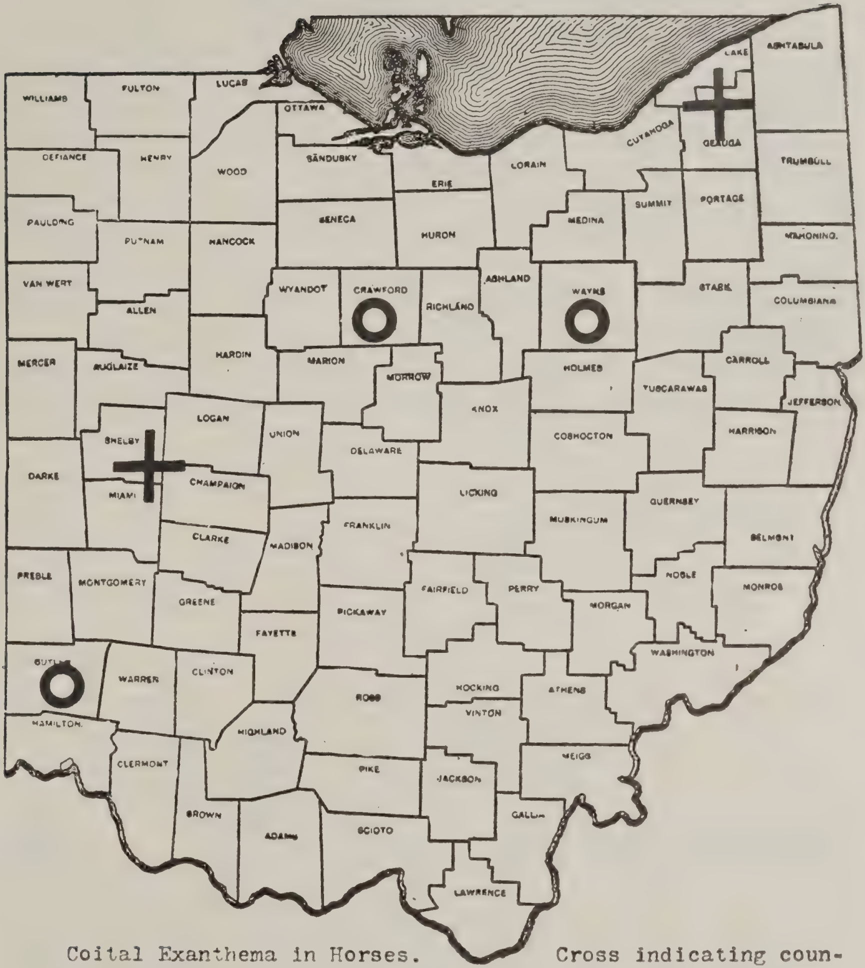
When the disease is limited in extent, and strictly local, the carcasses of affected animals are considered fit for human food, provided no emaciation exists and provided that the affected parts (the entire head, when the jaw is the seat of the disease) be removed under the direction of a competent meat inspector.

Requests are sometimes received from local boards of health to examine animals that are reported to be affected with actinomycosis. Whenever possible, these requests are complied with, but in most cases the parties making the requests are advised to obtain the services of local veterinarians, the time of the Veterinarian of the Board being fully occupied with matters pertaining to the more dangerous, infectious and contagious diseases.

COITAL EXANTHEMA

(Venerial Disease)

In Horses.



Coital Exanthema in Horses. Cross indicating counties in which the disease was located and investigated by the Board, circle indicating counties from which the disease has been reported as having existed, by local veterinarians.

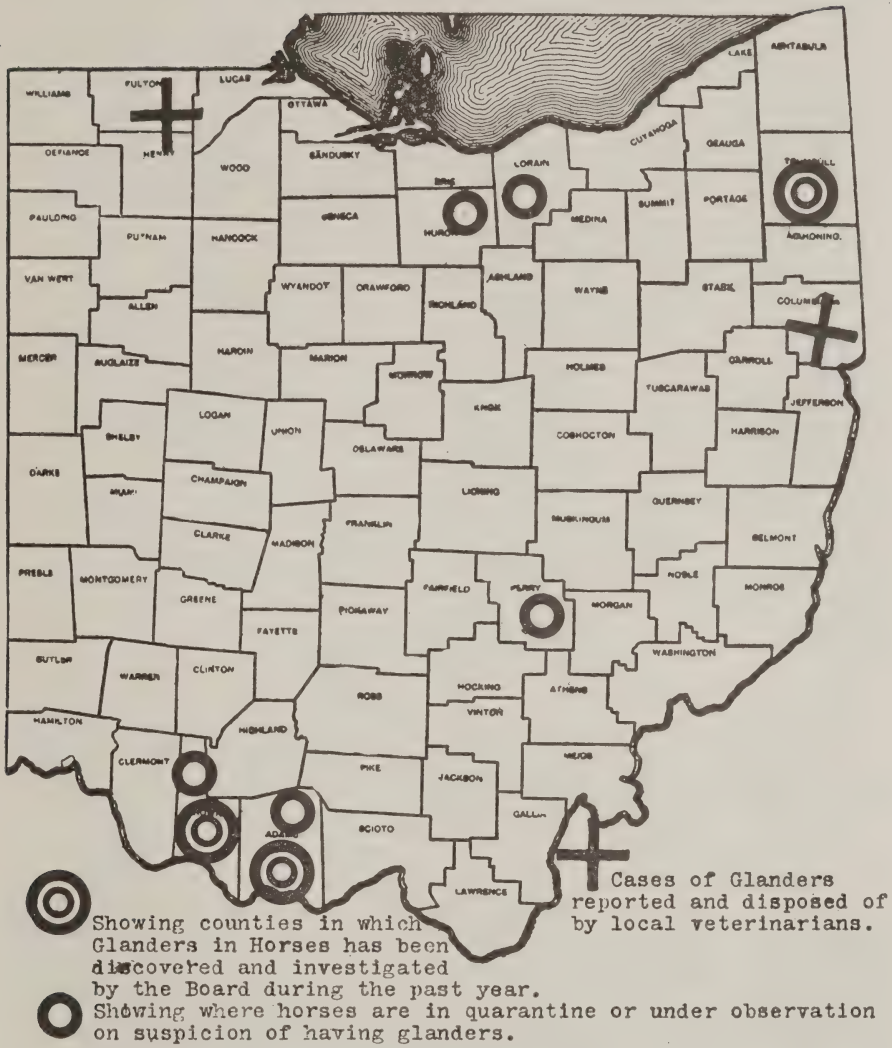
Coital exanthema was reported from five counties. In only two counties did it become necessary for the Board to make investigations and take measures for preventing the spread of the disease. Six animals (one stallion and five mares), located on as many farms, were found affected.

Compared with the year before, when over fifty horses in one county were affected, this is a very favorable showing, and is no doubt due to the fact that the function of the Board, in relation to outbreaks of infectious diseases among animals, is becoming more generally known and appreciated. Outbreaks of disease are being reported more promptly, thus enabling the Board to do the most effective work by enforcing preventive measures before the disease gets beyond control.

As stated in the last annual report, the appearance of coital exanthema in this state is of special interest from the fact that another disease similar in its first symptoms, but far more dangerous, and which may easily be mistaken for the disease under discussion, has spread among the breeding horses of some of our Western states, and has, in fact, been reported in one state bordering on Ohio. The disease referred to is Maladie du coit (Fr.) also called equine syphilis, although it has nothing in common with human syphilis. It is a disease, however, that should be equally dreaded. Nothing but strict sanitary police regulations, and laws under which they can be made, will prevent the ultimate introduction of this disease into Ohio. The expense necessary to enforce such regulations need not be excessive.

GLANDERS OR FARCY

In Horses.



As in past years, investigations of reported outbreaks of glanders (or farcy) in horses and mules have occupied more of the time of the Veterinarian and funds of the Board than any other disease. During the year ninety-nine horses and mules have been examined for glanders, as compared with eighty-one for the preceding year. With a few exceptions all of these animals were tested with mallein which was furnished the Board by the Bureau of Animal Industry of the United States Department of Agriculture. In one case only was an animal condemned without a mallein test.

The disease was distributed as follows:

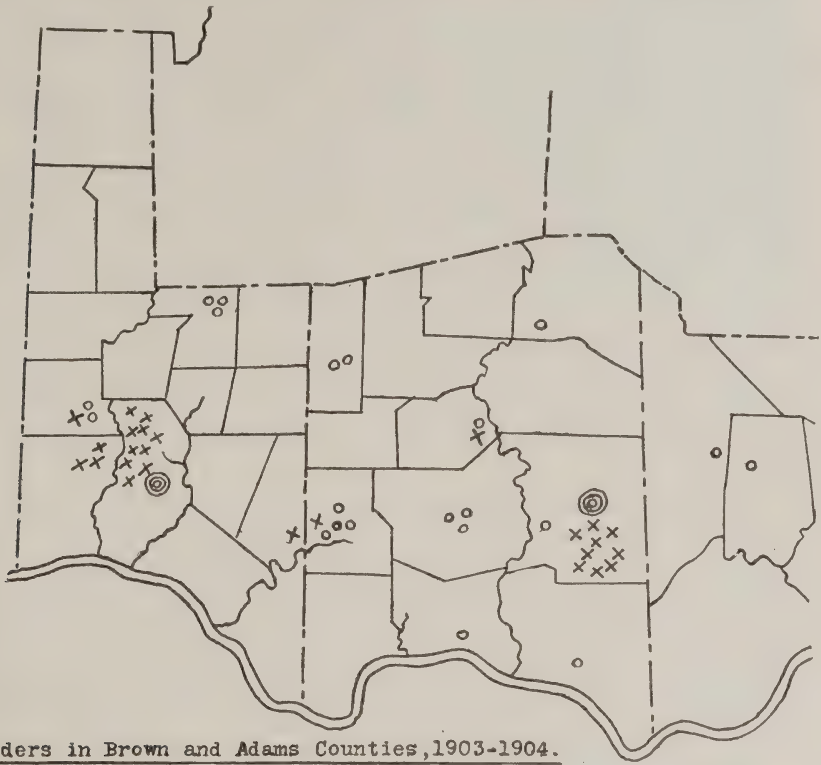
Place.	Kind of Animal.	No. Examined.	No. Affected.
Feesburg	Horses	4	1
Georgetown	Horses	31	13
	Mules	3	1
	Asses	1	0
Sardinia	Horses	3	0
Winchester	Horses	2	0
West Union	Horses	3	0
Blue Creek	Horses	12	9
	Mules	2	0
Decatur	Horses	2	2
Lynx	Horses	1	0
Otway	Horses	1	0
Henley	Horses	1	0
Dunkinsville	Horses	2	1
Stout	Horses	1	0
Bentonville	Horses	10	0
Locust Grove	Horses	1	0
Wakeman	Horses	1	0
Lorain	Horses	1	0
Holmesville	Horses	2	0
East Mecca	Horses	7	1
Clyde	Horses	4	0
Shawnee	Horses	1	0
Salem	Horses (destroyed voluntarily by the owner)	....	2

Total number examined and tested with mallein.................. 96
Total number affected with glanders........................... 30

The appraised value of twenty-one of these horses, which were destroyed by order of the Board, was seventeen hundred and twenty-five dollars ($1,725). Of the remaining eight, two are still in quarantine, having as yet not been destroyed, and the other six, having had glanders in an advanced stage, rendering the animals incapable of further service to the owners, no appraisals are given for these.

The disease was distributed over the following counties: Columbiana, Trumbull, Fulton, Brown and Adams. Brown and Adams counties furnished all but three of the thirty cases that came under the observation of the Board. The following map shows the distribution of the disease in the latter two counties as well as indicating the points where animals were held in quarantine during the year, under suspicion of having glanders.

In the case of Brown and Adams counties it was clearly shown that the disease was introduced with a shipment of Western horses that were brought from Columbus, Montana, in the fall of 1902. About one hundred and twenty-five horses were included in this lot. All but about forty of these were sold in Georgetown and to the farmers of the surrounding country, the remainder being taken to West Union, the county seat of Adams county, and scattered broadcast over the country from that point.



Glanders in Brown and Adams Counties,1903-1904.

✕ Showing approximate location,in townships,where horses
affected with glanders were destroyed; ○ Showing where
suspected or exposed horses have been examined,or are
in quarantine; ◎ Same as ○ ,but indicating from ten
to twenty horses.

The disease was first reported from Feesburg, in Brown county, September, 1903. It was reported that most of the horses in the shipment above referred to, were suffering from "shipping fever" when they arrived in Georgetown. "Shipping fever," which term signifies no definite form of disease, in this case seems to have been glanders, pure and simple.

Steps were taken to make a thorough investigation and locate every horse, as far as this was possible, that was included in this infected lot.

Thus far not more than half of these animals have been examined and tested with mallein. Of the other half single animals are from time to time reported to the Board and these are tested at the earliest possible date. Most of them will however never be located since, without a doubt, they have died from the effects of the disease with which they were afflicted.

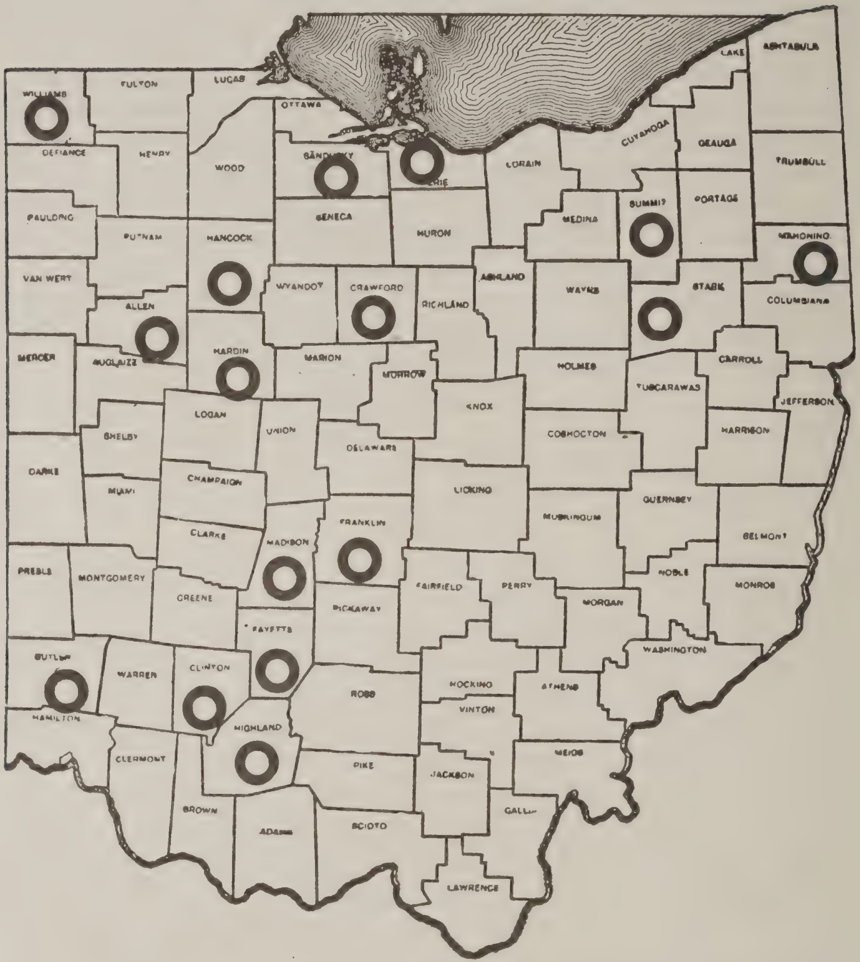
In all cases, where any of these Western horses were discovered, all other horses that had been in contact with them, as far as could be ascertained, were examined, and where it was deemed advisable tested with mallein. Nearly two hundred horses were examined and ninety were subjected to the mallein test. The mallein test requires taking of the temperature of the suspected animal at intervals of three or four hours during the day, the subcutaneous injection of the mallein at a late hour in the evening, either at 10 P. M. or at 12 P. M., and then resuming the recording of the temperature of the animal the next day at 4 A. M. or 6 A. M., respectively, and every two hours thereafter for eighteen hours, or until it has been definitely ascertained whether or not a reaction will follow the application of the mallein. Since it rarely happened that more than one or two suspected animals could be located at the same time, and in the same locality, the work connected with this investigation was enormous.

The Board was fortunate in being able to secure the services of Dr. M. B. Lamb in assisting Dr. Fischer in this work. The expense incurred during the few weeks that it was necessary to employ Dr. Lamb, however, proved to be a severe strain on the finances of the board, and it seems that in future, emergencies of this character should be provided for by a somewhat larger appropriation for general expenses. Ten thousand dollars per annum for the strictly veterinary work would enable the Board to make a vastly better showing at the end of the year, for good accomplished. This is just half the amount of money placed at the disposal of the cattle commissioners of the smallest state of the Union, Rhode Island, with a live stock valuation, for the state, of $2,281,807.00, while the live stock of Ohio is valued, at least, at one hundred and twenty million dollars, or over fifty times as much as that of Rhode Island. Yet the latter state finds it profitable to expend twenty thousand dollars yearly for the protection of its live stock against the invasion of infectious diseases from other states and countries.

A live stock sanitary commission, or a cattle bureau, is not a luxury, but a stringent necessity, and whatever money may be expended in the conduct of its work is a profitable investment for the whole state. Nor would the farmer and stock owner alone profit by this investment; the health of the domestic animals of the state concerns everybody. It is important that the four hundred and twenty-five million gallons of milk produced annually in this state come from healthy cows and that the eighty-seven million pounds of butter and nineteen million pounds of cheese be produced from pure milk. Some of the most dreaded diseases of the human family, such as glanders, anthrax, tuberculosis, rabies, etc., also occur in animals, and the latter are frequently the cause of the spread of these diseases to human beings.

But to return to the subject of glanders; to a slight extent, this disease exists, no doubt, in every part of the state, and particularly in the large cities, in which the Board has done very little active work. To what extent the disease may spread, if neglected even for a comparatively short time, has been shown in Brown and Adams counties. Under present conditions it would be a comparatively inexpensive matter to thoroughly control this disease in Ohio, even to exterminate it completely but if the work is neglected we must soon face conditions like those- existing in some of the other states, eastern and western, but notably Massachusetts, where, during the last two years the loss from this disease, among horses, exceeded six hundred and twenty-five thousand dollars, and the problem of ridding the state of the disease is approaching the magnitude of that of tuberculosis among cattle.

HOG CHOLERA AND SWINE PLAGUE.



Map showing counties from which outbreaks of Hog Cholera or Swine Plague were reported to the Board during the past year.

These two diseases, affecting animals that are the basis of an industry representing millions of dollars, and suffering annual losses of over half a million dollars due, chiefly, to the ravages of these diseases, are not receiving, and cannot receive, the attention that they should be given by the State Board of Live Stock Commissioners until provisions are made for carrying on the work in an effective manner. The control of hog cholera and swine plague requires large funds and, with these, intelligent and willing co-operation on the part of the owners of swine. At the present time there is manifested a tendency, on the part of many owners, to suppress information regarding the appearance of these diseases in their herds, rather than to aid the Board in locating them. The explanation of this is apparently the fear entertained by the owners of affected animals that any measures that are enforced with a view to controlling the diseases will necessarily result in a pecuniary loss to them. While this is true in a certain sense, in a few cases, it is certainly not so when a broader view is taken of the subject.

After either of these diseases has affected an animal, that animal, in all probability, will be a total loss to the owner. In most cases the diseases are incurable, and the meat of a diseased animal ought not to be considered as fit for human food.

The Board is endeavoring, as in the past, to aid the swine breeders and feeders of the state in controlling these diseases by inviting the owners of infected herds to report outbreaks as soon as they become known and receive in return advice and assistance, where the latter can be given, that will lead to the saving of at least a part of the herd, and that will tend to check the progress of the disease among those of their neighbors.

It has been shown that the introduction of certain sanitary measures will do more toward saving a large part of an infected herd of swine than any medicine yet discovered.

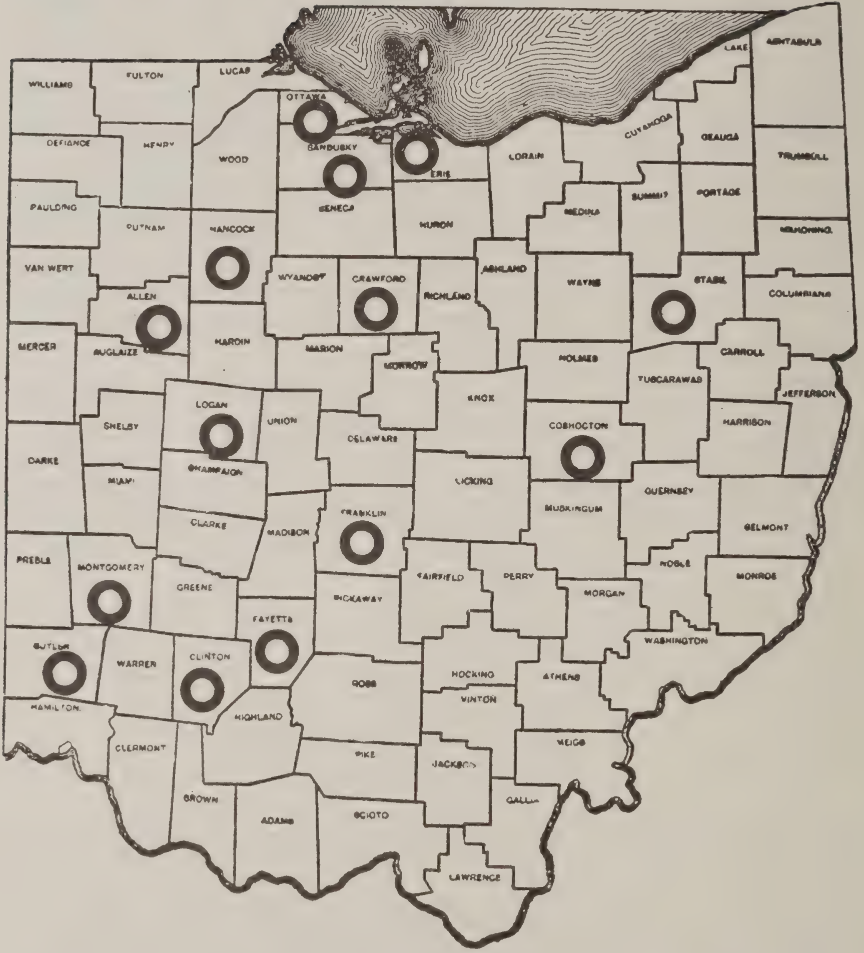
A bulletin on the prevention of swine plague and hog cholera was issued by the Board some time ago and copies of this are sent to all persons applying for the same, or who request information that it contains.

The above map shows the distribution of these diseases, by counties, as far as outbreaks have been reported to the Board during the past year.

INFECTIOUS KERATITIS

(Sore Eyes.)

In Cattle.



Infectious Keratitis of Cattle: Map showing counties from which the disease has been reported during the past year.

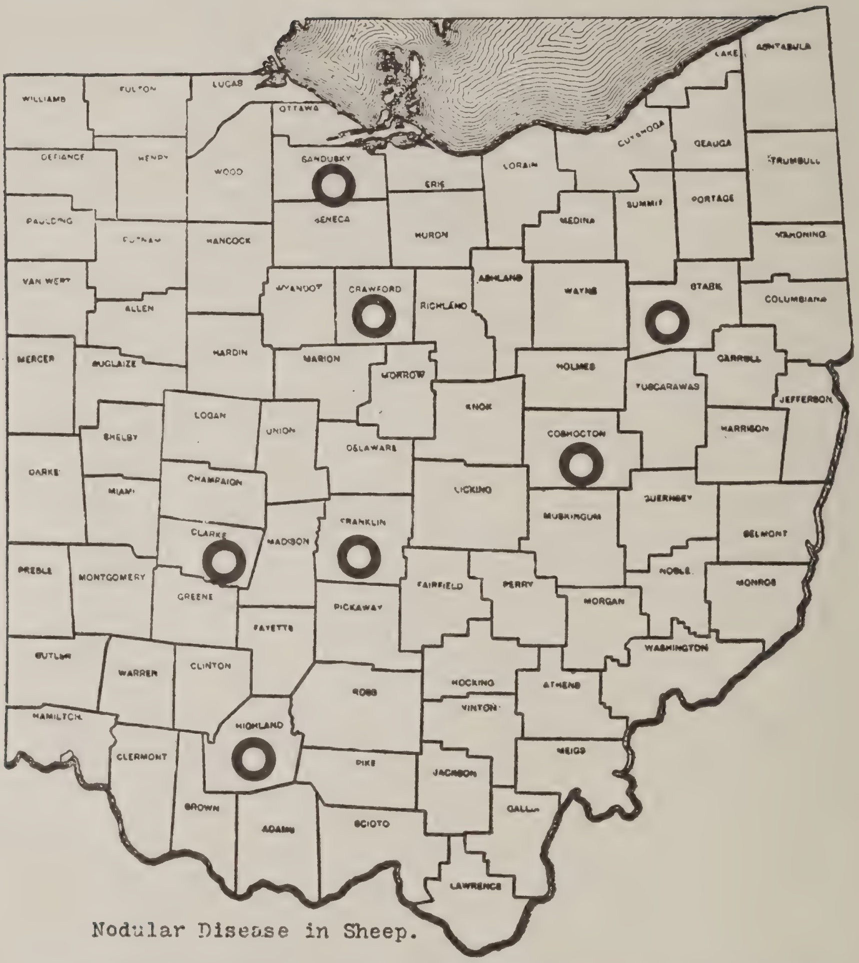
During the warm season, especially in the latter part of summer, this infectious eye disease is frequently reported. It affects the eyes of cattle and usually remains strictly localized. The course of the disease is short and usually terminates in perfect recovery within a few weeks. In a small per cent. of cases there may be permanent impairment of sight, or even complete loss of one or both eyes.

On the whole the disease is not considered a dangerous one, the loss occurring from it, as a rule, being confined to slight and temporary loss of flesh by the afflicted animal.

Owners reporting the existence of the disease in their herds are advised to isolate the affected animals, and to treat their eyes with an antiseptic wash. No further regulations for the control of this disease are advised by the Board.

NODULAR DISEASE

In Sheep.



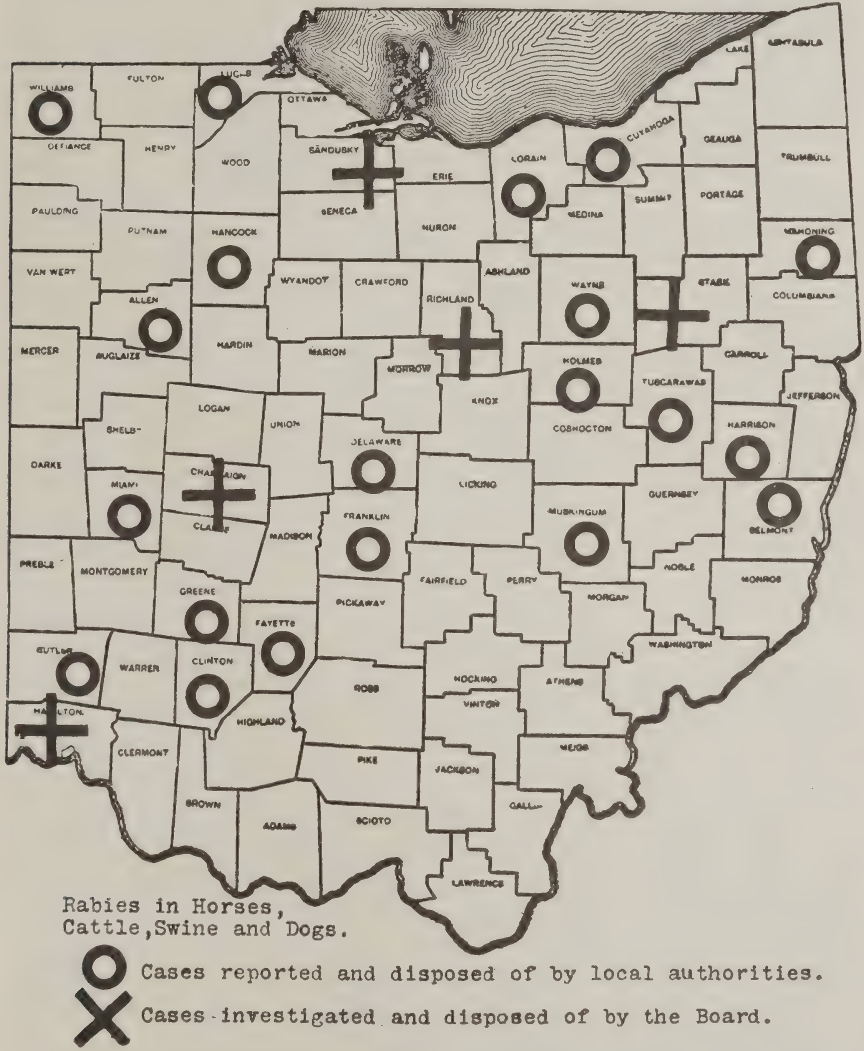
Nodular Disease in Sheep.

Map showing, by counties, the localities from which Nodular Disease in Sheep (Oesophagostoma Columbiana) has been reported during the past year.

Not many years ago nodular disease in sheep was unknown in Ohio; it is now reported more frequently from year to year and is becoming very destructive to sheep in several sections of the state. The disease is caused by an intestinal parasitic worm (Oesphagostoma Columbianua), which causes the appearance of various sized nodules (hence the name) in the walls of the large and small intestines of affected animals. Young pregnant ewes seem to suffer more than other sheep.

The disease frequently terminates in death, and in other cases it permanently affects the general health of the animal. Once introduced on a farm, it is a difficult matter to exterminate it. Its treatment is very unsatisfactory. One reason for this is that the life history of the parasite, which is the cause of the disease, is not thoroughly understood.

The best preventive is the observation of care in the purchase of new stock. Farms free from the disease should not be stocked with sheep from infected areas.



RABIES

(Hydrophobia.)

Rabies occurs in all of our domestic animals, as well as in man. During the past few years numerous outbreaks have occurred in Ohio, and probably no county in the state was entirely free from the disease during the past year. Although many of the reports of outbreaks that are received from the laity are based upon imaginary observations, the disease cannot be mistaken for anything else by one familiar with its symptoms.

The accompanying map shows the distribution of the disease, by counties, as investigated by the Board and as reported by reliable veterinarians, for the past year. Since the cut of the map was made the disease has also been reported from Union and Madison counties. The reports include outbreaks in horses, cattle, swine, dogs, cats, fowls and human beings.

The failure of local authorities in enforcing proper precautionary measures, and the absence of a state law authorizing the State Board of Live Stock Commissioners to take up the matter, are responsible for this condition. There is absolutely no excuse for the existence of rabies, to any extent, in a civilized country. A law requiring the muzzling of dogs in localities where the disease makes its appearance, especially in large cities, would, within one year of its enforcement, practically eradicate the disease from the state. No other sanitary measure is based on better principles or supported by higher authorities than this.

In nearly all of the cases reported to the Board, special investigations were unnecessary, the affected animals having been killed and disposed of before the reports were received. There were, however, a few exceptions to this rule. The most important of these were the outbreaks of the disease at Louisville, Stark county, in January, and at Belleville, Richland county, in October, 1904. At Louisville it became necessary to order the destruction of thirty-three hogs belonging to Wm. B. Royer, and at Belleville the destruction of seventeen hogs owned by H. C. Steel. These hogs were appraised at $347.59 and $212.80 respectively. In each of these herds the disease appeared as a result of infection from the bites of rabid dogs. An undetermined number of hogs were bitten, some developing the disease and in their turn transmitting it to others. Since it was impossible to recognize the infected animals and remove them from the healthy ones, before symptoms of the disease developed and additional animals had become infected, and a rabid hog being fully as dangerous an animal as a mad dog, the above radical measure was thought to be the only safe one.

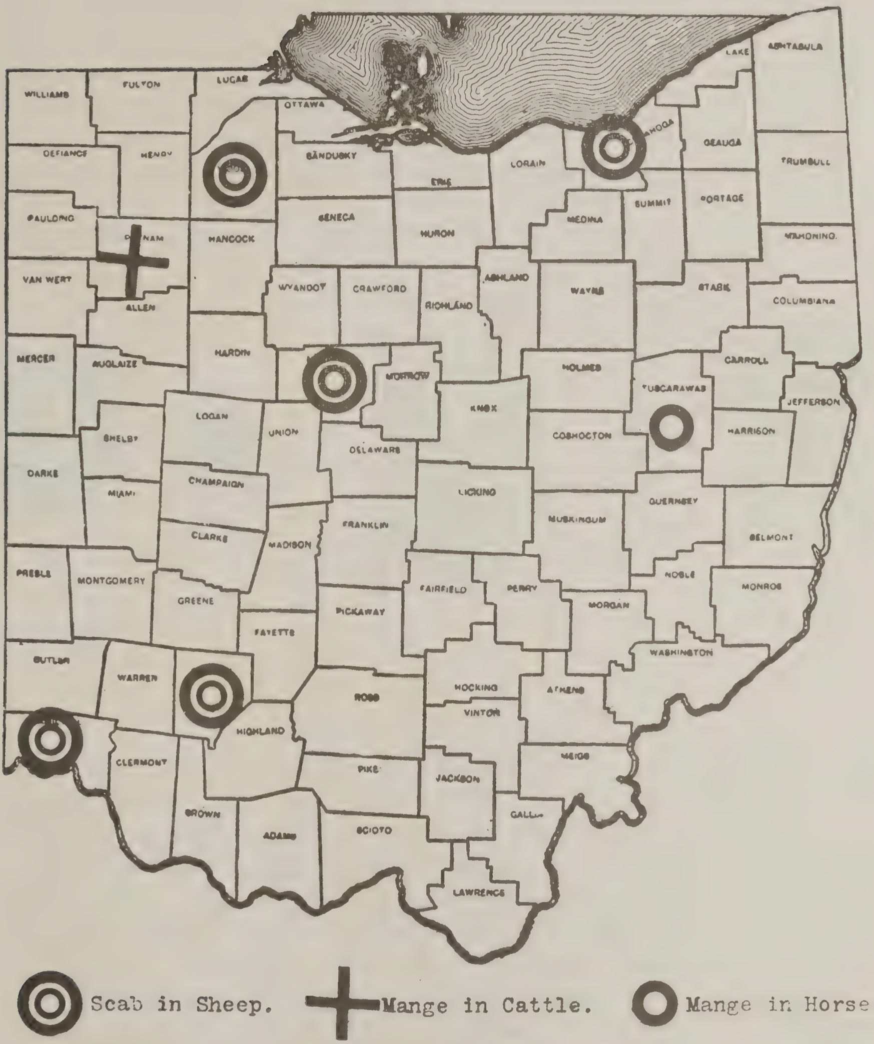
Dogs that had been exposed to the disease were ordered destroyed in Hamilton, Richland and Sandusky counties.

A number of rabbits were inoculated in the pathological laboratory of the Board, to aid in making diagnoses of certain cases that were reported in the course of the year.

SCABIES

(Scab, Mange, Itch.)

In Horses, Cattle and Sheep.



Scabies is a most troublesome skin disease, affecting all domestic animals and man. Its cause is a small parasite, the itch mite, which is related to the spiders. There are many species, and almost an innumerable variety of these mites, each of which causes a particular kind of itch, or scab.

Itch mites are grouped into three genera, the species of each genus having habits differing considerably from those of the other groups.

These are (1) the Sarcoptes, (2) the Psoroptes, (3) the Chorioptes. Nearly every domestic animal is subject to the attacks of a species from each of these groups, consequently to several kinds of scab. Nearly all of the itch mites of our domestic animals will affect man, producing slight, but only temporary, attacks of the same disease. The Sarcoptes, however, may become very serious. The latter, with the Psoroptes, are the more important of the three groups. Figures *1, a and 1, b represent the male and female of Psoroptes communis, the cause of scab in sheep. A variety of this mite, P. communis, var. bovis, is the cause of the common cattle itch. Figures *2, a and 2, b represent the male and female Sarcoptes scabiei, distinct varieties of which affect the horse, sheep, goat, dog, cat, pig and man.

The Psoroptes are the larger mites, as shown by the relative sizes of the figures which are magnified fifty diameters. A keen eye can detect the Psoroptes as minute specks, but the Sarcoptes are microscopic.

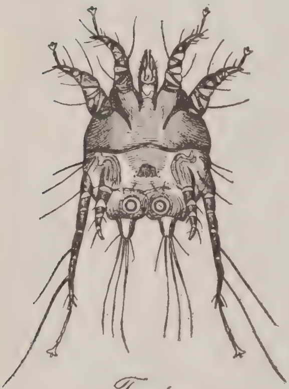


Fig. 1, a.

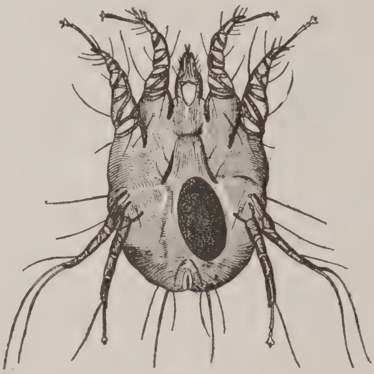


Fig. 1, b.

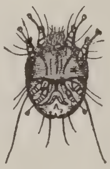


Fig. 2, a.

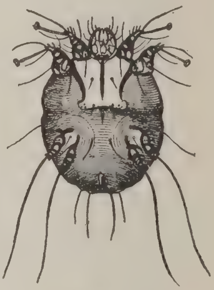


Fig. 2, b.

The Psoroptes live on the surface of the skin, attaching themselves to the hair, wool or projecting scales and live by sucking the blood and lymph from the skin of the animal. The Sarcoptes live in tunnels or burrows which they make under the skin. These peculiar habits of the mites explain why some forms of mange are easily curable, and why others resist the application of the most heroic remedies.

The common sheep scab and cattle mange belong to the first class. Dipping is the effective treatment. Two dippings are necessary to produce a cure, the first dip kills all the mites, but does not destroy their eggs which are always present in large numbers. After a few days the eggs hatch, and the young mites are destroyed by a second dipping that is given a week or ten days after the first.

The treatment of Sarcoptic mange consists in the persistent application, at short intervals, of various parasiticides, and proper dietetic treatment. Some cases are practically incurable.

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*Neumann.

SCABIES

(Scab)

In Sheep.

The control of sheep scab in Ohio is a very important matter, and on account of the thorough organization of the work, with the co-operation of the Bureau of Animal Industry of the United States Department of Agriculture, has been crowned with a great degree of success.

The counties from which the disease was reported in 1904 are given in the table below. The number of affected sheep found in each county upon investigation, and ordered dipped by the board, and the number that were found to have been shipped out of the county to the various abattoirs at which federal inspectors are stationed, are given in separate columns. Where it was possible to locate the source of the infection this also is indicated.

NUMBER OF INFECTED SHEEP THAT WERE LOCATED.

County.	No. of Sheep.	Source of Sheep.
Cuyahoga	195	Chicago
Marion	167	Chicago
Wood	553	Chicago
Hamilton	34	Kentucky (?)
Clinton	112	Chicago

Total..................................1,051, as compared with 1,725 for 1903.

It should be noted that in every case it was possible to trace the origin of the disease to some point outside of the state. The regulations that were issued for the control of this disease will be found in the appendix.

MANGE IN HORSES.

(Sarcoptic Mange.)

Sarcoptic mange was discovered among a number of horses near Gilmore, in Tuscarawas county. The disease was located on three different farms and six animals were found to be affected. Investigations leading to the discovery of the disease were begun June 7, 1904. All affected animals were at once ordered under strict quarantine, treatment was prescribed, and on November 4th, all animals having completely recovered, the quarantine was removed. At the present time the disease is not known to exist in the state.

The origin of the outbreak above described seems to have been some livery stable in Newcomerstown, in which horses affected with the disease were temporarily stabled. No definite information could, however, be obtained on this question.

MANGE IN CATTLE.

The existence of this disease was reported by Dr. E. P. Schaffter, Inspector for the Bureau of Animal Industry, at Cleveland. A carload of cattle affected with mange had been received from a shipper in Leipsic, Putnam county. Investigation showed that these cattle had been shipped to Leipsic some months before, from the West. They had been fed on several farms in the vicinity of Leipsic and had come in contact with another herd of cattle. As a precautionary measure these farms, and cattle, were held in quarantine until investigation showed that no further traces of the disease existed in the neighborhood.

TUBERCULOSIS

In Cattle.

The work with tuberculosis has been along the same lines that were followed in previous years. Whenever requests were received, dairy herds were tested with tuberculin and the owners were instructed as to the best methods of keeping their herds free from the disease in future.

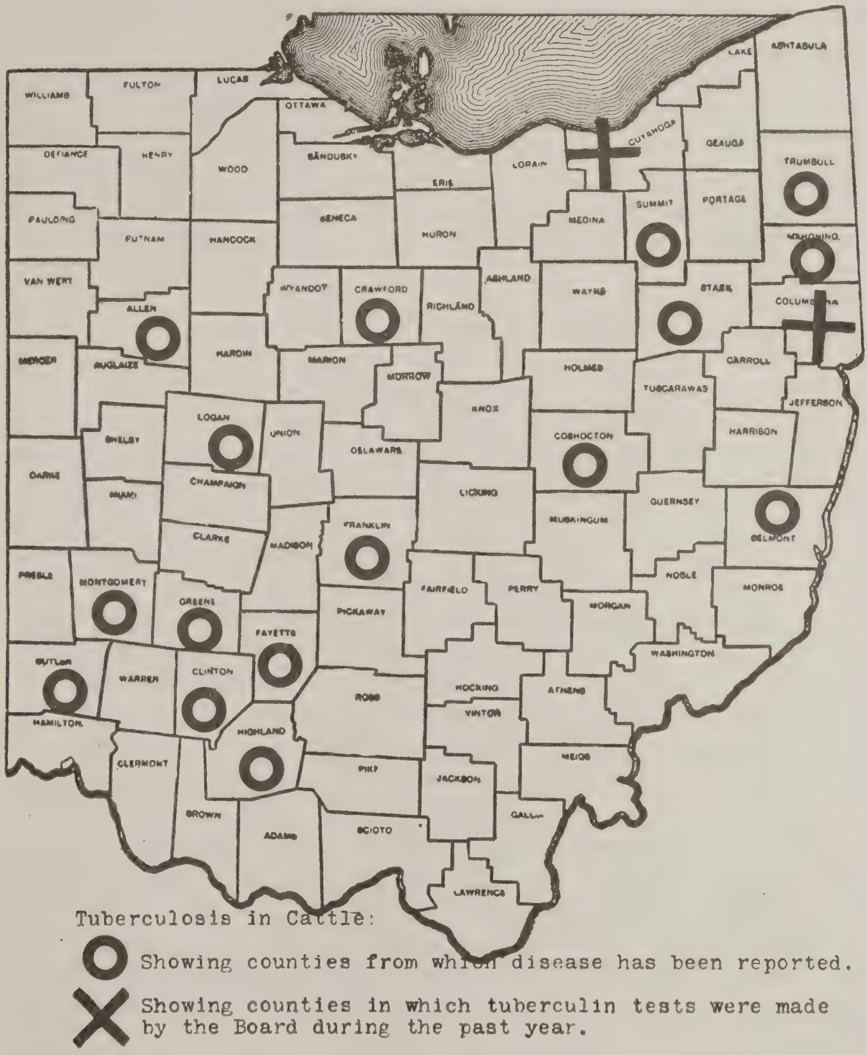
Although requests of this kind were rather numerous, only a comparatively few herds were actually visited and examined. As stated in the last annual report, the reason for this was that in most cases the owners were unwilling to comply with the conditions imposed by the Board, viz., the destruction of all affected animals, *or* the destruction of those in an advanced stage of the disease, permanent quarantine of those less affected, and sterilization of the milk from the quarantined animals, before the milk or its products should be offered for sale.

The reluctance of some owners to sacrifice their cattle, rather than to send them to market and realize some return from them, regardless of the injury to the unsuspecting buyer, will be an insurmountable obstacle to the successful control of tuberculosis, until provisions are made by the state to bear at least a part of the burden.

This is done by many other states, and in most of these, but notably in Pennsylvania, the results have been extremely gratifying. In the latter state the extent of tuberculosis is said to have been reduced fully one half within the four or five years that the work has been in progress.

Judging from the results of the few investigations that have thus far been made by the Board, tuberculosis must be far less prevalent in Ohio than seems to be the case in some other states. The following quoted from the report of the State Veterinarian of Pennsylvania, (Dr. Leonard Pearson), will be of interest in this connection:

"Without control, we have every reason to expect tuberculosis to become as common among the live stock of this country as it is in the old infected regions abroad, where in large cities from one-half to two-thirds of the cattle are infected and where in some countries, as in the Kingdom of Saxony, thirty per cent. of the cattle that are killed for food are found to contain alterations of this disease.



Tuberculosis in Cattle:

○ Showing counties from which disease has been reported.

✕ Showing counties in which tuberculin tests were made by the Board during the past year.

"We have the advantage of knowing both the enemy and the means to be employed in combating it, and if tuberculosis shall ever become more firmly rooted in Pennsylvania, it will be because the lessons of experience are unheeded and available protection ignored."

An appropriation of fifty thousand dollars ($50,000.00) for the use of the board in beginning the work of wiping out this disease would be none too large. The resulting benefits would be appreciated by the people of Ohio, as well as those of other states, where the work of repressing tuberculosis has been in progress for some years and where its fruits are now being reaped.

The value of the cattle that died from disease in Ohio in 1901, according to statistics given in the Ohio Agricultural Report for 1902, is four hundred and twenty-two thousand, seven hundred and forty-four dollars ($422,744.00). How much of this must be ascribed to tuberculosis is impossible to state; but the fact that tuberculosis is by far the most prevalent infectious disease of cattle in Ohio, is significant.

SOUTHERN CATTLE FEVER.

(Texas Fever.)

Not a single case of Southern cattle fever was reported in this state during the year 1903. The same is true for the year just closed.

On several occasions tick infested cattle were brought into the state, but they were always discovered in time to prevent the infection of our native cattle. The following is the only case of interest: On August 22, 1904, a carload of twenty cattle, that had apparently become infected en route from St. Louis, in a tick infested car, were unloaded at West Jefferson, Ohio, and pastured on the farm of H. C. Wilson. About two weeks later, September 6th, these cattle were shipped to Philadelphia. Before they arrived at their destination two of their number had died of Texas fever. An investigation followed, the Wilson farm was placed in quarantine for some time, but no further trouble resulted.

The regulations of the Board require that all persons, companies, etc., shipping Southern cattle, or causing them to be shipped into the state, shall first obtain a permit from the State Board of Live Stock Commissioners, which must show that the pens or yards and the unloading shutes that are to be used for these cattle have been inspected by the State Veterinarian and found to conform with the requirements of these regulations.

Cattle coming from south of the national quarantine line for Southern cattle fever may be unloaded at such places for the purpose of immediate slaughter only. Shipments for any other purpose are prohibited. These regulations have proved effective in every sense of the word.

FINANCIAL REPORT OF THE STATE BOARD OF LIVE STOCK COMMISSIONERS FOR THE YEAR BEGINNING NOVEMBER 3, 1903, AND ENDING NOVEMBER 7, 1904.

To balance of appropriation by the General Assembly for the year ending February 15, 1904	$2,467 33	
To appropriation by the General Assembly for the year ending February 15, 1905	3,000 00	
By expenses of officers and members of the Board		$ 49 20
By salaries		2,330 00
By expenses of State Veterinarian		949 81
By general expenses		1,587 94
By balance of appropriation unexpended		550 38
	$5,467 33	$5,467 33

The State Board of Live Stock Commissioners,
W. W. Miller,
Secretary.
Paul Fischer,
Veterinarian.

[APPENDIX A.]

LAWS RELATING TO LIVE STOCK AND THE BOARD OF LIVE STOCK COMMISSIONERS, ITS DUTIES, ETC.

Revised Statutes of Ohio.

SEC. 4210. [*What cattle infected with disease shall not be brought into state.*] No person shall bring into the state of Ohio any cattle infected with the disease commonly known as the "Texas or Spanish fever," or pleuro-pneumonia, rinderpest, or other contagious diseases or any cattle liable to impart such fever or disease to other cattle; but this section shall not affect common carriers who are not the owners of cattle. Whoever violates the provisions of this section shall be liable to any person injured by bringing such cattle into the state in the amount of any loss occasioned thereby, in addition to other penalties provided by law.

(For importing cattle infected with Spanish fever see Sec. 7003.)

SEC. 4211. [*Presumptions in actions to recover damages for infection.*] Whenever any Texas or Cherokee cattle, liable to impart disease, are brought into the state, and any such disease as Texas or Spanish fever makes its appearance within sixty days, and infects other cattle that have been on the same highway, common or pasture ground traveled over by such Texas or Cherokee cattle with such disease, such fact shall be deemed and taken in action to recover damages as prima facie evidence that such Texas or Cherokee cattle were infected with the disease known as the "Texas or Spanish fever," and that they imparted such disease; and the owner of such Texas or Cherokee cattle at the time they were brought into the state, and the owner of such cattle at the time the disease makes its appearance, shall be jointly and severally liable for any damages resulting from such disease.

SEC. 4211-6. [*Transportation of cholera-infected hogs.*] From and after the passage of this act, it shall be unlawful for any person or persons owning or having charge of any hog or hogs infected with cholera to transport the same within the borders of this state.

SEC. 4211-7. [*Liability of violator.*] Any person or persons violating the provisions of this act shall be liable for all damages resulting from the introduction of such disease thereby, to be recovered by any person so damaged, and shall also be deemed guilty of a misdemeanor and on conviction thereof shall be fined in any sum not exceeding five hundred dollars or be imprisoned in the jail of the county not exceeding six months, or both.

SEC. 4211-8. [*Common carriers or employes not affected, etc.*] This act shall not be construed so as to affect common carriers or their employes and shall take effect and be in force from and after its passage.

SEC. 4211-9. [*Board of live stock commissioners.*] The Ohio state board of agriculture shall be and is hereby constituted the board of live stock commissioners for the promotion and protection of the live stock interests of the state and the prevention of the spread of infectious and contagious diseases among domestic animals and the extermination of the same; and to co-operate with the Bureau of Animal Industry of the United States Department of Agriculture, in the suppression and extirpation of contagious and infectious diseases among domestic animals. The board may elect such officers as it may deem necessary, and shall have powers in its organization and work to prescribe such rules and establish such regulations, not in conflict with law, as it may deem necessary, to secure strict quarantine and otherwise prevent the spread of infectious and contagious diseases among live stock and extirpate the same so far as it may be able to do so.

SEC. 4211-10. [*Duty as to extirpating diseases.*] The board of commissioners are authorized to use all proper means to prevent the spread of dangerous and fatal diseases among domestic animals, and to provide for the extirpation of such diseases; and in the event of any such contagious or infectious disease breaking out in this state, it shall be the duty of all persons owning or having in charge animals infected with the same, to immediately notify said board of commissioners, or some member thereof, of the existence of such disease, and thereupon it shall be the duty of said board immediately to cause proper examination thereof to be made by a competent veterinarian; and if said disease shall be found to be a dangerously contagious or infectious malady, the board shall order the diseased animals, and such as have been exposed to the contagion, to be strictly quarantined in charge of such person as the board, or an authorized member thereof, shall designate, and to order any premises or farms where such disease exists, or has recently existed, to be put in quarantine so that no domestic animal subject to such disease be removed from or brought to, the premises or places so quarantined; and the board shall prescribe such regulations as they may deem necessary to prevent the contagion from being communicated in any way from the premises so quarantined.

SEC. 4211-11. [*Bodies of dead animals.*] The bodies of all dead animals shall be buried or burned by the owners thereof, as provided by law. See Sec. 6923*a*.

SEC. 4211-12. [*An act to suppress dangerously contagious diseases of animals; expenses of quarantining such animals; duty of sheriffs and constables.*] That any person having in his possession or under his care, any animal which he knows, or has reason to believe, is affected with a dangerously contagious or infectious disease, and does not, without unnecessary delay, make known the same to said Board, or to some member thereof, or to the sheriff or constable of the proper county, to be by him communicated to said board; or any person or corporation who shall bring into this state, or sell or dispose of any animal, knowing the same to be affected as aforesaid, or any animal having been exposed to such contagion, within three months of such exposure, or shall move the animal so diseased or exposed from the quarantine to which it was ordered by the board of commissioners, or shall move any animal to or from any district in this state declared to be infected with such contagious disease, or shall bring into this state any animal of the kind diseased from any district outside of the state that may at any time be legally declared to be affected with such disease without the consent of said board, except under such conditions as are or may be prescribed by said board, shall, upon conviction of either of the aforesaid offenses, be fined in any sum not exceeding five hundred dollars. And all proper expense incurred in the quarantining of animals under the provisions of this act, shall be paid by the owners thereof, and if the same is refused, after demand made by the order of the commissioners, an action may be brought to recover the same with costs of suit, which action may be in the name of the state of Ohio, for the use of the board of live stock commissioners. It shall be the duty of all sheriffs and constables to execute within their several counties all lawful orders of the said commissioners.

SEC. 4211-13. [*Records of board; report; printing expenses; compensation, etc.*] The board of live stock commissioners shall keep a record of its acts and investigations of diseases of live stock and report the same to the governor on the first Monday of November, annually, and shall publish and distribute such bulletins and reports as may be deemed of general interest and information. The supervisor of public printing shall provide for such printing as the board may deem necessary and desirable to benefit the live stock interests of the state, under the same provisions as are made for other state printing. Each member of said board shall receive for his services the sum of *three* dollars per day and necessary traveling expenses for each day he is actually engaged in the investigation and eradication of diseases of domestic animals by the direction of the Board.

SEC. 4211-15. [*Proclamation prohibiting importation of diseased live stock.*] Whenever the governor of the state of Ohio, upon receipt of information from the state board of live stock commissioners shall * * * believe that any dangerous, contagious or infectious disease has become epidemic in certain localities in other states, territories or counties, or that there are conditions which render domestic animals of such infected district liable to convey such disease, he shall, by proclamation, prohibit the importation of any live stock of the kind diseased into the state, except under such regulations as may be prescribed by the state board of live stock commissioners and approved by the governor.

SEC. 4211-16. [*Appraisement and killing of diseased animals.*] When in the opinion of the commissioners it shall be necessary to prevent the further spread of any dangerous, contagious or infectious disease among the live stock of the state, to destroy animals affected with or which have been exposed to any such disease, it shall determine what animals shall be killed, and shall appraise or cause the same to be appraised, by disinterested citizens, as hereinafter provided, and cause such animals to be killed, and their carcasses to be disposed of as in the judgment of the commission will best protect the health of the domestic animals of the locality; provided, that no animal shall * * * be slaughtered under the provisions of this act unless first examined by a competent veterinarian in the employ of the commission, and the disease with which it is affected or to which it has been exposed adjudged to be a dangerous and contagious malady.

SEC. 4211-16*a*. [*Appointment of veterinarian; compensation; additional veterinarians, etc.*] The board of live stock commissioners shall appoint a competent veterinarian whose compensation shall be fixed by the board; such veterinarian to perform all duties prescribed by the board and be subject to such rules and regulations as it may adopt. In case of an outbreak of animal disease, the board may, if it is deemed advisable, appoint temporarily, additional veterinarians or other persons for any special work in furtherance of the live stock interests of the state, and fix their compensation.

SEC. 4211-16*b*. [*Officers, agents or employes shall have authority to enter upon public or private premises, car, boat, etc.*] In the enforcement of any provisions of this act or any other laws relating to the board of live stock commissioners, and in the enforcement of the rules and regulations that may be adopted under the authority of section one (4211-9) of this act, the board of live stock commissioners, or any of them or their authorized officers, agents or employes, shall have authority to enter upon any public or private premises, or within any building wherein live stock is housed, or to enter any railway car or any boat or other conveyance used in the transportation of live stock, for the purpose of inspection and for the protection of the live stock of the State.

SEC. 4211-16*c*. [*Penalty and fine for failure to comply with the rules of the board of live stock commissioners.*] The failure of any individual, company or corporation to comply with the rules of the board of live stock commissioners, or to respect its regulations with regard to diseased animals, when notified so to do, shall subject the offender to a penalty of not less than fifty ($50) dollars nor more than five hundred ($500) dollars, to be recovered by civil action in the county where the offense is committed or in the county of Franklin, and in addition to the penalty above provided, a person violating any of the provisions of this act, shall be deemed guilty of a misdemeanor, and on conviction shall be fined not less than fifty ($50) dollars nor more than two hundred ($200) dollars; such fines and penalties to be collected in the name of the state of Ohio, for the use of the board of live stock commissioners.

SEC. 4211-16*d*. [*Co-operation with the United States in the enforcement of law.*] The board of live stock commissioners is authorized to accept on behalf of the state the rules and regulations prepared by the commissioner of agriculture under and in pursuance of section three, of an act of Congress, approved May 29, 1888, entitled "An act for the establishment of a bureau of animal industry, to prevent the exportation of diseased cattle and to provide means for the suppression and extirpation of pleuro-pneumonia and other contagious diseases among domestic animals," and to co-operate with the authorities of the United States in the enforcement of the provisions of such act.

SEC. 4211-16*e*. [*The Bureau of Animal Industry of the United States to have right of inspection, quarantine and condemnation of animals; power to call upon constables, peace officers, etc.*] The inspector of the Bureau of Animal Industry of the United States shall have the right of inspection, quarantine and condemnation of animals affected with any contagious, infectious, or communicable disease, or suspected of being so affected, or that have been exposed to any such disease; and for these purposes are authorized and empowered to enter upon any ground or premises in the state. They shall have power to call upon any constables and peace officers to assist them in the discharge of their duties in carrying out the provisions of said act of Congress; and it is made the duty of said officers to assist them when so requested. The inspectors shall have the same powers and protection as peace officers while engaged in the discharge of their duties.

SEC. 4211-17. [*Compensation for animals destroyed.*] In case of destruction of any animal under the provisions of this act, the compensation to be made for the same by the state shall be computed upon the basis of the actual value of the diseased animal, if any, at the time of slaughter; for any animal that has been kept in the same building or enclosure two-thirds of such value, and in case of other animals destroyed for the extinction of such disease, the full value of the same without reference to the suspicion of contagion; provided, that no compensation shall be made to any person who may have brought animals into the state affected with such contagious disease, or from a district in which such contagious disease existed, or who may have wilfully concealed the existence of such disease among his stock or on his premises or may have by wilful neglect or purposely contributed to the spread of such contagion; and in appraising animals to be slaughtered as herein provided, no allowance shall be made on account of such animals being thoroughbred, or pedigree stock.

SEC. 4211-18. [*Appropriation to pay claims; how made.*] All claims against the state by owners of animals slaughtered under the provisions of this act, shall, when approved by the board of live stock commissioners, be reported by said commission to the governor, to be by him communicated to the legislature with the recommendation, if the matter is approved by him, that the proper appropriation be made to pay such claims.

WHEREAS, All cattle wintered in the states of Florida, South Carolina, North Carolina, Georgia, Alabama, Mississippi, Louisiana, Tennessee, Arkansas, Texas and the Indian Territory, are infected with a germ which renders them capable, except during the frost of winter, of infecting Northern cattle with a malady commonly known as "Texas fever," while they show no manifestation of disease; therefore,

SEC. 4211-19. [*The driving of cattle from certain states forbidden during certain months; conveyance by railway forbidden, except.*] During the months of March, April, May, June, July, August, September and October no cattle shall be permitted to be driven into this state from any of the above mentioned states or Indian Territory, or that shall have been wintered therein, nor shall any person or company bring, or cause to be conveyed into this state by railway or otherwise, any such cattle under said conditions, except as specified in the next section of this act.

SEC. 4211-20. [*Unloading of certain cattle in certain months forbidden, except.*] Any railroad or other transportation company conveying into or through this state, or any stock-yard company receiving such cattle during the months aforesaid, will not be permitted to unload the same in this state for any other purpose than to be fed and watered or for immediate slaughter, and in yards and premises especially provided for that purpose, into which northern cattle will not be permitted to enter. And the location and arrangement of the said yards or premises and the disinfection of the cars and quarters used in the transportation of such cattle shall be governed by the rules and regulations prescribed by the board of live stock commissioners.

SEC. 4211-21. [*Penalty.*] Any person or corporation that shall bring or cause to be brought or driven into this state, any cattle wintered in the states or territory above mentioned, or to be driven or conveyed otherwise than as herein specified, shall, upon conviction thereof, be fined in any sum not less than one hundred dollars, nor more than one thousand dollars, and shall, moreover, be liable for all damages that may be occasioned on account of other cattle being infected with said disease.

SEC. 4211-22. [*Duty of transportation companies; penalty for violation of such duty.*] It shall be the duty of all railway and other transportation companies bringing into and unloading in this state cattle, otherwise than as specified in section *two* (4211-20) of this act, during the months above specified, to require a statement to be made in their shipping bills, showing in what state or territory the cattle shipped were wintered; and it shall be the duty of every railroad company bringing into this state cattle, which may unload such cattle for any other purpose than to be fed and watered as specified in section two (4211-20) of this act, to leave at the office of such company nearest the point where such cattle may be unloaded, a copy for public inspection of the statement above required, showing where the same were wintered; and any company or corporation neglecting to comply with the provisions of this section, shall, upon conviction thereof, be fined in any sum not exceeding five hundred dollars.

SEC. 4211-23. [*Prosecution for offenses hereunder.*] Upon the request of the board of live stock commissioners it shall be the duty of the prosecuting attorney of any county in which the suit may be brought to begin and prosecute any action for the violation of the provisions of this act and the rules and regulations of the board of live stock commissioners. Proceedings against any railway company under this act may be had in any county in this state through which any portion of such company's road may pass, or in which its principal office may be situated; and process may be served by leaving a copy at the office of such company within such county.

SEC. 4211-24. [*Penalty for selling or failing to keep securely isolated horses, etc., affected with glanders.*] Any person owning or having in his charge any horse, mule or ass that he knows or has reason to believe is affected with the disease known as glanders or farcy, or that has been adjudged to be so affected by the state board of live stock commissioners upon a report made to said board by a competent veterinary surgeon, in their employ, after a careful examination of such animal, who shall sell or otherwise dispose of, or secrete the same, or shall fail to keep such animal securely isolated so that contact with other horses, mules or asses shall not be possible, shall, upon conviction of either of said offenses, be fined in any sum not exceeding five hundred dollars, and shall, moreover, be liable for all damages sustained by reason of same.

SEC. 4211-25. [*Appraisal and payment of compensation in case of destruction of such animals by order of live stock commission.*] In case the live stock commissioners shall order the destruction of any animal affected with glanders or farcy in the chronic stage of the disease, which may be adjudged capable of rendering some service, the board may cause the animal to be appraised, and order such compensation to be paid out on the order of the live stock commissioners, on the warrants of the auditor of state out of any funds in the treasury to the credit of the live stock commission, as in the judgment of the commissioners may be just, not exceeding its cash value; provided the horse was not diseased when passed in possession of the owner.

SEC. 4211-26. [*Penalty for suffering sheep affected with scab to run at large or for selling same, knowing, etc.*] Any person owning or having in charge any sheep affected with foot-rot or scab who shall suffer the same to run upon any highway, common or other uninclosed ground, or shall sell such sheep, knowing or having reason to believe them to be diseased, without disclosing the fact to the purchaser, shall, upon conviction of either of said offenses, be fined in any sum not exceeding one hundred dollars, and be liable to parties injured for all damages sustained.

(See Sec. 6855 as to allowing diseased animals to run at large.)

SEC. 4212. [*Duties of carriers and owners of stockyards.*] All railway companies and owners of steamboats used in conveying live stock and owners of stockyards and other premises that may be occupied by such stock, shall, immediately upon discovering any contagious disease among stock occupying such cars, boats, yards, or other premises, take all possible measures to prevent such diseased stock from communicating the contagion to other stock, and shall moveover cause all such cars, boats, yards, and premises to be thoroughly disinfected before the same shall be occupied by other stock. Every corporation and company, their officers and employes, or individuals violating the provisions of this section, shall pay a penalty not exceeding five hundred dollars, to be recovered in any court of competent jurisdiction, and shall also be liable to parties injured for all damages that may be occasioned thereby.

[APPENDIX B.]

GENERAL RULES OF THE BOARD OF LIVE STOCK COMMISSIONERS OF OHIO.

Rule 1. When supposed cases of dangerously contagious or infectious diseases of live stock are reported to the Board of Live Stock Commissioners, the Secretary of the Board shall, when, in his judgment it appears necessary, direct the State Veterinarian to make a thorough examination of the affected animal or animals; and if the State Veterinarian is of the opinion that any contagious or infectious disease exists, he shall, if deemed necessary, at once cause to be quarantined the diseased, as well as all exposed, animal or animals and premises or farms where such disease exists, and report his action to the Secretary of the Board.

Rule 2. No examinations or investigations shall be made in accordance with Rule 1 until the Secretary of the Board and the State Veterinarian are satisfied that the reports of outbreaks of disease are reasonably well founded.

Rule 3. The Board of Live Stock Commissioners, before ordering an investigation by the State Veterinarian, may require two or more reputable citizens of the county in which a reported case of dangerously infectious disease exists, to make a written statement confirming such report.

Rule 4. When the State Veterinarian shall order diseased animals, or such as have been exposed to a contagion, and any premises or farms where such disease exists, to be strictly quarantined, he may call upon the sheriffs or constables of the county or counties in which such quarantine is ordered, to execute said quarantine. All proper expense incurred in the quarantining of animals shall be paid by the owners thereof. Any quarantine ordered by the State Veterinarian shall remain in force until removed by his order.

Rule 5. In case the Board of Live Stock Commissioners shall order the destruction of any animal affected with glanders or farcy, in the chronic stage of the disease, which may be adjudged capable of rendering some service; or when, in the opinion of the State Veterinarian, it shall be necessary to prevent the spread of any contagion or infection among the live stock of the state, he may require diseased animals to be killed and their carcasses burned or buried, as he may direct; in either case, said animals shall be appraised by disinterested freeholders of the county in which such animals are owned, one to be selected by the owner of the animal or animals killed or destroyed, and another by the Board of Live Stock Commissioners; and these two, if they cannot reach an agreement, shall select a third person to act with them; these shall make the report of their findings to the Secretary of the Board of Live Stock Commissioners and he shall refer the same to the Board; and, if findings are approved, the Board shall report the same to the Governor of the state, to be by him communicated to the Legislature, with the recommendation, if the matter is approved by him, that the proper appropriation be made to pay such claims.

Rule 6. The State Veterinarian may prescribe and publish rules for disinfection of barns, sheds or premises where infectious diseases exist or have existed, and for the disinfection of harness, utensils, wagons, etc., kept on such premises.

Rule 7. Upon request of owners desiring to ship animals to other states or territories requiring certificates of health accompanying such animals, it shall be the duty of the State Veterinarian, or an inspector designated by him, to inspect said animals, and if, after inspection, the State Veterinarian is satisfied that the animals in question are free from observable symptoms of any dangerous, infectious or contagious disease for which the particular state or territory into which the animals are intended to be shipped requires inspection he shall issue the required certificate.

Rule 8. All expenses of inspection provided for in Rule 7 shall be borne by the owner or shipper who makes request for inspection, and shall be at the rate of five dollars ($5) per day, or fraction thereof, and all necessary expenses of travel and subsistence.

Rule 9. Owners of abattoirs or other persons desiring to import Southern cattle for the purpose of immediate slaughter must apply to the Board of Live Stock Commissioners for a permit to unload such cattle within this state. Upon receipt of a request for such permit, the Secretary shall direct the State Veterinarian to inspect the pens and abattoirs to be used for the purpose specified, and if these are found to conform with the requirements of the Board of Live Stock Commissioners for the unloading of Southern cattle, the Secretary and the State Veterinarian shall issue the permit.

[APPENDIX C.]

To Railroad, Steamboat, Transportation, Abattoir and Stock Yard Companies and Their Employes:

Your attention is hereby called to those laws of Ohio which relate to the bringing of certain cattle into this state, viz.: Sections 4211-19, 4211-20, 4211-21, 4211-22 and 4211-23, Revised Statutes. A copy of these laws is enclosed herewith.

The rules and regulations of the Board of Live Stock Commissioners regulating the unloading of *Southern* or *quarantine cattle* are given below:

1. The pens for receiving Southern or quarantine cattle for purposes of feeding, watering or immediate slaughter must be constructed of two strong board fences which must be at least five feet high and separated by a space of at least *twelve feet* and into which space or passage no cattle or stock of any kind shall be permitted to enter.

2. The pens used for receiving Southern or quarantine cattle for the purposes above mentioned shall not be used for receiving any other kinds of live stock.

3. Before any person, company, firm or corporation may legally handle Southern or quarantine cattle a permit must be obtained from the Board of Live Stock Commissioners; such permit to be furnished after the State Veterinarian has, at the request of the person, company, firm or corporation desiring such permit, completed an inspection of the pens intended to be used for the purposes mentioned, and found them safe places for handling such cattle.

The State Veterinarian shall also designate a suitable place at or near the point of unloading in which cattle cars used for transporting Southern or quarantine cattle shall be cleaned and disinfected before they are again used for the transportation of other live stock or merchandise of any kind, and before the quarantine placards placed on such cars are removed.

The following rules* for cleaning and disinfecting cattle cars used for transporting Southern or quarantine cattle have been adopted by this Board:

Remove all litter and manure and disinfect it by mixing it with lime or saturating it with a 5 per cent. solution of 100 per cent. carbolic acid, or, if not disinfected, it may be stored where no cattle can come in contact with it during the period from Feb. 1 to Nov. 15 of each year. Wash the cars and the feeding and watering troughs until clean. Saturate the entire interior surface of the cars and fencing, troughs and chutes of the pens with a mixture of 1½ pounds of lime and one-quarter pound of 100 per cent. straw colored carbolic acid to each gallon of water: or a solution made by dissolving four ounces of chloride of lime to each gallon of water may be used; or disinfect the cars with a jet of steam under a pressure of not less than 50 pounds to the square inch.

By order of the State Board of Live Stock Commissioners.

W. W. MILLER,
Secretary.
PAUL FISCHER,
Veterinarian.

*These rules were issued in Order No. 93, Bureau of Animal Industry, U. S. Department of Agriculture, and have been adopted by the Board of Live Stock Commissioners of Ohio.

[APPENDIX D.]

PERMIT FOR RECEIVING SOUTHERN CATTLE FOR THE PURPOSE OF IMMEDIATE SLAUGHTER.

COLUMBUS, O............190..

THIS IS TO CERTIFY, That the cattle pens and abattoir used by.....................in...................., Ohio, for receiving Southern cattle for the purpose of immediate slaughter have been duly inspected by the State Veterinarian and have been found to conform with the requirements of the Board of Live Stock Commissioners for the unloading of Southern or quarantine cattle.

The owner..or manager..of this abattoir hereby agrees to use said pens for the purpose of receiving animals to be immediately slaughtered and for no other purpose. The owner.. or manager.. of this abattoir further agrees to clean and disinfect, according to the rules of the Board of Live Stock Commissioners, all cars in which..he..receives Southern, or quarantine cattle, and to notify said Board within forty-eight hours of the time that such cleaning and disinfection was performed. Cars requiring disinfection must not be removed from the yards where cattle were unloaded until they have been cleaned and disinfected as above provided.

The rules for cleaning and disinfecting Southern cattle cars are given below:

> "Remove all litter and manure and disinfect it by mixing it with lime or saturating it with a 5 per cent. solution of 100 per cent. carbolic acid, if not disinfected it may be stored where no cattle can come in contact with it during the period from February 1 to November 15 of each year. Wash the cars and the feeding and watering troughs until clean. Saturate the entire interior surface of the cars and fencing, troughs and chutes of the pens with a mixture of 1½ pounds of lime and one-quarter pound of 100 per cent. straw colored carbolic acid to each gallon of water; or a solution made by dissolving four ounces of chloride of lime to each gallon of water may be used; or disinfect the cars with a jet of steam under a pressure of not less than 50 pounds to the square inch."

This permit is issued....................190.., and is to remain in force until January 1, 190.., or until it is withdrawn by the State Board of Live Stock Commissioners.

....

Owner or Manager of Abattoir. *Secretary B. of L. S. C.*

....

State Veterinarian.

[This permit is not valid unless signed by the owner or manager of the abattoir for which it is issued and by the Secretary and Veterinarian of the State Board of Live Stock Commissioners. Penalty for unloading Southern cattle without this permit is $100 to $1,000 and liability for all damages that may be occasioned on account of other cattle being infected with Southern cattle fever. See Sec. 4211-21, Revised Statutes.]

[APPENDIX E.]

THE PREVENTION OF SWINE PLAGUE AND HOG CHOLERA.

By Dr. Paul Fischer, *State Veterinarian.*

Swine plague and hog cholera are the most common and destructive diseases of swine. The annual losses which they occasion are enormous. The fact that both diseases are at the present time practically incurable leaves us the only alternative of using every means in our power to prevent their introduction into healthy herds. Prevention is the best method of dealing with any communicable disease. For swine plague and hog cholera we know of no other method.

In this short article I shall confine my remarks as strictly as possible to this phase of the question.

The investigations of bacteriologists have shown that swine plague and hog cholera are two different and distinct diseases of swine. The clinical picture of these diseases, their mode of infection and manner of dissemination offer many points of similarity; both are very fatal, and as far as practical hints on their prevention are concerned, what applies to one of them applies equally well to the other. For this reason my remarks will be limited to swine plague, the reader bearing in mind that the facts and suggestions are equally applicable to both diseases.

Swine plague is a very fatal, infectious and contagious disease of swine. It is caused by a so-called "germ" known as the swine plague bacillus, an inconceivably minute vegetable parasite that grows in the animal tissues and by the poisons or toxines which it excretes it causes the symptoms observed in the course of the disease. An idea of the size of this "germ" may be obtained from the statement that fifty thousand of them placed side by side in a row would not make a line one inch long. This extreme minuteness is of the utmost importance when the question of prophylaxis, or prevention, is considered, as we shall see later.

In order to be able to intelligently provide means for the prevention of a disease we must know something of its cause, how infection takes place and how the infectious principle (germ) is spread from place to place and from animal to animal.

The cause of swine plague is the swine plague bacillus; it is positively known that this is the sole cause of the disease. If we can escape or avoid the cause of any disease we can with absolute certainty prevent the disease. This is the simple statement of an actual fact. Carrying out this idea in a practical way is a practical possibility, but sometimes attended with difficulties. We find the swine plague bacillus in the tissues, blood, secretions and discharges of every animal affected with swine plague. These are the only direct sources of this bacillus that are known. The disease spreads by the spread of its germs. Where the first pig became infected with swine plague bacilli is as little known as where the first pig itself came from, and is of little importance here. At the present time we can, however, trace both of them to direct ancestors, and can get them from no other source.

How do Healthy Pigs Become Infected?

Healthy pigs always become infected with the products, excretions or discharges of sick pigs.

1. Any of these products may become dry, reduced to dust, and inhaled by a healthy animal. The smallest visible particle of dust is large enough to carry with it hundreds of germs. In this way the lungs are affected and a cough or some form of pneumonia is the first symptom of the disease.

2. The food of healthy pigs may be contaminated with the discharges of sick ones. Here the stomach and intestines become the seat of the first morbid changes, and diarrhœa, constipation and other symptoms of digestive troubles are first observed.

3. Wounds, such as are produced by castration, may become infected by contact with infected excretions or discharges. Slight abrasions of any kind, even slight wounds inflicted by lice, answer the same purpose. In these ways general or blood infections take place.

After the germs leave the sick animal's body they may remain alive and able to produce disease a very long time. How long such germs remain active depends entirely on the conditions of heat, light and moisture under which they are kept and on the substance in which they are present. A warm, moist and dark place containing organic matter, decaying vegetation, manure, etc., is most favorable for their long continued existence. Great heat, dryness and direct sunlight tend to destroy disease germs of all kinds after a certain time. Mere drying, however, requires a very long time to destroy many disease germs. This is an important point in the question of disinfection.

We have seen how animals become infected with swine plague germs when diseased hogs are present. Now the question arises:

How are healthy and comparatively, or apparently, isolated herds infected and how are the disease germs transported from place to place?

Healthy herds become infected by the direct or indirect introduction of disease germs from infected herds. It is here proper to state that swine plague germs have no power of independent motion from place to place—they cannot fly. The disease, therefore, does not, and cannot, spread through the air. Dust-laden air may carry the germs, but here it is the dust particles to which the germs cling and not the air that acts as a carrier. Such infected dust is probably never carried any great distance. It is carried from pen to pen, when these are adjacent, but rarely to any greater distance.

The important distributing agents of the hog cholera germs are persons, animals, utensils and conveyances employed, or used in or about swine plague infected pens, also water courses, etc. Attendants carry the germs on their boots and in their clothing; animals carry them in the mud on their feet and in their hair coats; wagon wheels move infected dirt from place to place; utensils or vessels used in and about pens may harbor countless germs. Dogs and other animals, even birds, may spread the contagion from place to place. Finally, water courses, rivers, creeks and drains or ditches of any kind that course through or near infected pens carry the disease germs from place to place. The amount of material thus moved and introduced into a healthy herd is entirely immaterial. A single germ, under favorable conditions, is just as capable of producing a fatal attack of disease as any number of millions. The extreme rapidity with which these simple organisms multiply readily explains this. *A single* *swine plague bacillus, in twenty-four hours, may have developed into many millions.*

When the bacilli have once been introduced into a herd they rapidly multiply and infection is only a question of a short time. The time required for a distinct outbreak of disease to appear after the germs have been introduced on the premises, must, of course, vary with the opportunities for infection. Constitutionally weak, sickly, very young or wounded (recently castrated) animals are attacked sooner than others. After the germs have once entered the body of an animal, that is, after infection of the animal has occurred, the first symptoms of disease will, as a rule, appear in the course of a few days, but a pig *may* harbor these germs five weeks before distinct symptoms of the disease can be noticed. The long time that may thus sometimes elapse accounts for many mysterious infections where no possible source or opportunity of infection can be recalled or imagined.

If swine plague is caused by certain species of bacteria and if these bacteria are the sole cause of this disease, we might ask, why does the disease occur only, or principally, in certain seasons of the year? This is easily explained. Fall and spring are the hog cholera or swine plague seasons. These are the times when the conditions of temperautre and moisture are most favorable to the propagation of these disease germs and opportunities for infection are most numerous. At these seasons of the year traffic in hogs is at its highest. Pigs are bought, sold and exchanged, all kinds from many localities are put together in feeding pens, are fed poorly balanced rations that are intended to fatten a previously half-starved animal in the shortest possible time. This will do anything but aid an animal in resisting an attack of disease. Although no swine plague can develop without the swine plague bacillus, it is a well-known fact that all animals that are exposed to infection by this germ do not take the disease. Every animal has a certain natural power to resist disease. This power to resist disease varies exceedingly in different animals, just like growing and fattening qualities differ widely. Some animals possess this power to such a degree that they absolutely resist an attack of swine plague—even direct injection of pure cultures of germs has no disease-producing effect. Such animals are said to be *immune*. Other individual animals possess exactly opposite qualities; they cannot resist the slightest attack. This partly explains why some animals have mild attacks, others severe attacks; the former usually recover, the latter die. Still others, as above stated, are immune, and in some animals the disease takes a chronic course. Why and how all this is cannot be explained here, but this may be stated: The natural disease-resisting power of an animal can be artificially increased to such an extent that under ordinary conditions it will greatly aid the animal to successfully resist an attack of swine plague. Proper food, care and shelter, proper breeding, and avoiding everything that tends to weaken an animal's constitution are the points to be looked after. A fat, flabby pig fed almost wholly on corn stands the smallest chance of escaping a fatal attack. A half-starved animal cannot fare much better. In either case the food itself is not the direct cause of the disease, it has simply prepared the animal for a fatal attack.

We have now seen how animals become infected with the germs of swine plague, how the germs are conveyed from one animal to another through food, drink, inhalation of dust-laden air, and direct introduction through wounds, and how the germs are carried from one herd to another, from farm to farm, and, finally, the conditions which are most favorable for producing fatal infections. This prepares us for the main question:

How can we prevent swine plague?

The answer is plain: Avoid the swine plague germ, and, in addition, for the sake of both profit and health, feed and breed according to scientific principles.

The first injunction is the most difficult and important one. To fulfill it requires the utmost care and foresight. Nevertheless, it is mere child's play compared with burning cholera corpses, and certainly more remunerative.

Successful prevention of contagious and infectious diseases requires attention in every minute detail. We are dealing with an invisible enemy and, therefore, must constantly guard every possible port or means of entrance.

To begin properly we should select a suitable site for the pig pen. A high, dry and light place, not near a stream, ditch or any other drain that could act as a carrier of germs either to or from the pens (our neighbors should be considered as well as ourselves, because we expect them to consider us). The pens should be built in such a way that they can be cleaned readily and thoroughly, and, if necessary, disinfected. They should be moderately high and have plenty of large doors and windows to admit air and sunshine; these latter are real tonics and at the same time they check the development of, or even absolutely destroy, disease germs.

Second. Have healthy pigs to begin with and feed them properly balanced rations; this increases their power to resist disease. Avoid inbreeding and the use of weak males. Keep the pigs free from lice and worms. It is a significant fact that most pigs that have cholera or swine plague are lousy or have intestinal worms! These parasites predispose animals to infection by germs. Use straw or other material for bedding or use no bedding at all, whichever suits your conditions better, but keep the sleeping quarters dry and as free from dust as is possible with proper care, and do not allow the pigs to burrow and sleep under an old straw pile or live in or under the manure heap.

It will be seen that the methods here suggested are radically different from those found in common practice, but this should not discourage any one. Our object in doing these things is the prevention of swine plague and hog cholera and increasing the profit of pork production by eliminating the greatest factor in the direction of loss. Past methods have so evidently failed to do this that nothing but a radical change of methods can be expected to accomplish anything.

Third. After doing everything possible toward beginning with a healthy herd and providing sanitary quarters and feeding wholesome food adapted to the ends desired, we must keep out the swine plague bacillus. This is done by personal or individual quarantine or isolation of the pigs and their pens. This is the whole thing in a nutshell. It is a most difficult problem, nevertheless it is absolutely possible.

Contagious pleuro-pneumonia of cattle is the cause of loses amounting to millions annually in many countries of Europe and other continents. This disease was introduced into America in 1843, and in the course of time by natural methods of spreading and reimportation from Europe a large number of the Eastern states became infected with this disease. Not until 1887 were serious attempts made by the United States Government to stamp out this disease. In 1892, after five years, the disease was officially declared to be eradicated by the Bureau of Animal Industry of the United States Department of Agriculture. This was done at a cost to the Federal Government of about one million, five hundred thousand dollars. The benefit to the cattle industry of America from this work can simply not be estimated. But the point that I wish to make is this: If a disease like contagious pleuro-pneumonia of cattle can be controlled and stamped out of a country as large as America, how much more simple a matter wiuld it be to control a disease on a single farm? For example, hog cholera or swine plague. Both classes of diseases are due to micro-organisms; infection takes place in a similar manner, and although all details in handling the two problems are by no means identical, the principles upon which they depend are exactly the same. As long as the federal or state governments do not take the work in hand each farmer or swine-breeder must work out his own salvation. Concerted action and general co-operation of swine-breeders generally, made possible by associations, would simplify and aid matters materially. But this is said only by the way. Let us now consider the necessary means and methods at the disposal of individual owners.

I will repeat that strict individual quarantine is the basis upon which the solution of our problem seems to rest.

What is "Quarantine?"

"Quarantine" means a space of forty days the time formerly required for a ship to remain isolated and forbear all intercourse with the shore when it was suspected of being infected with some contagious disease. At the present time "quarantine" means simply the complete isolation of any person, animal, building or premises for the necessary length of time to prevent the spread of a contagious or infectious disease.

A quarantine may be ordered by federal, state or local authorities, or it may be a personal or individual matter. At the present time personal quarantine by the owner of the swine is the most effective means for controlling swine plague, or hog cholera. In this case the owner quarantines the whole country to protect his own herd. This amounts to a simple trespass notice which every person is legally bound to observe.

Note the following instructions:

1. Let no unauthorized person approach within fifty feet of your hog-pens or yards. This includes everybody who you are not absolutely certain has not been with or near swine plague infected, or other hogs, or animals, or pens, or things which, or persons who, could in any possible way carry or harbor swine plague germs. The personal appearance of individuals is no criterion upon which to base distinctions. Always suspect everybody until proved innocent or harmless.

2. Permit no animals to which the above remarks may apply to approach nearer than fifty feet to your pens or yards where the hogs are kept. The same applies to wagons, carts, utensils, even food and clothing; in fact, to anything and anybody.

3. Instruct attendants to keep strictly away from cholera or swine plague infected, or any other kind of, hog-pens or premises where hogs are kept or have recently been.

4. Politely inform your neighbors that trespassing on your premises near your hog-pens is forbidden under penalty of the law and explain to them what the word trespassing as here used, means.

5. The owner of the hogs is just as liable to carry and introduce disease germs as anyone else; bear this in mind and act accordingly. If your neighbor's hogs are dying of some mysterious disease, take his word for it, but investigate no further; assume that it is cholera or swine plague and exercise increased vigilance. Do not go over to look at the sick hogs, you may soon have some of your own if you do.

6. The laws of Ohio forbid the transportation, in any way, of cholera or swine plague infected hogs, or hogs exposed to cholera or swine plague, or their carcasses or products. Special rules and regulations of the Board of Live Stock Commissioners also forbid such transportation. Persons violating these laws or rules are liable to heavy fines, ranging from fifty to five hundred dollars, in addition to other penalties. Remember this and be free in imparting this information wherever it is needed.

7. When any infectious swine disease is prevalent in your neighborhood or county exercise increased care in following the instructions here outlined. Re-read this bulletin occasionally.

8. Observe care in introducing new stock into your herds. Remember that a pig may have the swine plague germs in his system five weeks or more without showing ordinary symptoms of disease. Never buy stock pigs to feed; this is the best way known to infect your premises with swine diseases. No matter how good a judge you may think you are, you cannot recognize hog cholera or swine plague by simply looking at the pig. If you have followed this business for any number of years with good success, stop it now. The time will come when you will see your mistake.

9. Breed and raise your own animals; it is cheaper and better in every way, and no other way is safe.

10. If you must buy a new herd or a new boar, make careful inquiries as to the existence of the disease, and then, if everything looks safe, take the animals home and put them in a special pen, isolated from the rest, at least fifty feet away from other hogs, and quarantine them for six weeks; in the meantime keep careful watch for any signs of disease. If at the end of that time the animal or animals are still in perfect health and show no suspicious symptoms, and have had no possible opportunity to become infected while under quarantine, you may remove your restrictions and allow the newly acquired animals to mingle with the rest. This is going to some trouble, and, perhaps, expense, but do not expect results without these little incidentals.

Disinfection.

It would hardly be proper to close this article without a word about the subject of disinfection. The principles upon which disinfection depend are the foundation of sanitary science. At the same time it is no exaggeration to state that, as ordinarily practiced, disinfection is worse than useless. It is not only time and money wasted, but it gives a false feeling of security that may lead to great harm.

The object of disinfection is the destruction of disease germs, and of germs of putrefaction and decomposition. To be of any benefit, the process must be thorough and complete, otherwise it is not *disinfection.* When disinfecting for disease germs this is of special importance. It is a matter of destroying millions upon millions of invisible organisms. It, therefore, stands to reason that destruction of half of them, or three-fourths of them, or even of ninety-nine per cent. of their number is not sufficient Every single germ may be destroyed! One germ that escapes may do as much harm as a million. The requirements for success are:

1. The proper preparation of the place to be disinfected.
2. The selection of a suitable disinfectant.
3. Thorough application of the disinfectant.

1. Clean the yards, pens, troughs, utensils, etc., to be disinfected. Remove all litter, rubbish and loose stuff of any kind; do not allow a particle to remain. Use a sharp hoe or spade, and then a broom to finish up. Haul this material, if it is good for manure, out on a level field where no drainage takes place and where no animals have access, spread it out in a thin layer and thus expose it to the action of the sun's rays. This will soon make the mass harmless. Do not expect the sun to disinfect great chunks; the particles must be fine, like a top-dressing for wheat. Material that cannot thus be utilized must be burned. Do not haul any of this material over roads that you will drive swine over the next time, and do not forget that the wagon also needs disinfection when you get through with it. Remove all loose, broken or rotten boards from the floor and sides and burn them. If there is a dirt floor, remove several inches of this or as deep as the secretions or excrements of the animals may have soaked down. Then treat this like the manure. Treat straw and manure piles that were exposed to infection the same way.

2. After thorough cleaning and destruction by burning of everything useless we are ready for our disinfectant. There are many good disinfectants. No particular disinfectant is better than all others. Some have one advantage, others another. Some are better for certain disease germs, others for other purposes. The odor of a disinfectant is no indication of its strength. The strongest disinfectants have no odor at all. For general disinfection crude carbolic acid is about as cheap as anything else and much safer than some others. We use it in five (5) per cent. solutions. This is approximately made by dissolving three tablespoonfuls of carbolic acid in one quart of water, or by dissolving one pound of the "acid" in two and one half (2½) gallons of water. *Unslaked* lime used freely is also a reliable disinfectant. For articles that can stand it, boiling for one minute destroys *all ordinary* disease germs.

3. The disinfectant is best applied with a spray pump. Wet, or soak, every inch of floor and wall space, outside and inside; the roof and ceiling of pig-pens must also be included. See that every crack and crevice comes in touch with the liquid. Every nail-hole must be wet with it. Allow nothing to escape. Don't forget sills, rafters, cross-beams and shelves. The dirt floor must be thoroughly soaked with the disinfectant. Troughs and utensils, wagons, tools, in short everything must be treated in the same way. When you are through, disinfect your shoes in the same way, and your clothes by boiling them.

Then open all doors and windows wide and give the air and sunshine free access for a week or ten days. If this work is done thoroughly no dangerous disease germs will be left and the pens will be safe once more.

Yards of any size, and particularly where much rooting has been done by the pigs, cannot easily be disinfected. A good plan is to seed these down; best with some crop to be cultivated, and in the course of a year the ground will be safe.

These are brief directions for disinfection of disease-infected quarters, after the diseased animals have been removed and the dead ones destroyed by burning.

Disinfection for other purposes need not be so thorough, because putrefaction and decomposition germs are everywhere and cannot be completely removed. With them our object is simply to reduce numbers. The more thoroughly this is done, of course, the better. For this latter purpose all pens and stables should be cleaned and disinfected whenever and as often as they need it. This varies with different conditions, places, and the person who does the work. Where pens or farms have become infected with cholera the plan above outlined should be followed and then no pigs kept on the place for one year; or if the time extends over the hot season, six months will suffice. After this, new stock, by observing the precaution of quarantining six weeks, may, with safety, be introduced. Under no considerations be induced to buy from neighborhoods where infectious or contagious swine diseases of any kind are reported to exist.

Summary.

1. Swine plague and hog cholera are infectious and contagious diseases.
2. The causes of these diseases are invisible "germs," called bacteria.
3. These germs can be carried in food, water, clothing, mud on the shoes of persons or on the feet of animals, by dogs, birds, and other animals, utensils, etc.
4. Infection takes place through dust-laden air, contaminated food and drink, wounds of castration, bites of lice, etc.
5. Curative treatment is useless or impracticable.
6. Prevention is possible and practicable.
7. Food does not and cannot produce cholera or swine plague.
8. Susceptibility in animals varies, some are readily attacked, a few are immune.
9. Proper food and care, and judgment in breeding, increases the animal's power to resist disease. Poor food and care have the opposite effect.
10. Buying stock hogs or feeders is a dangerous plan. Farmers should breed and feed their own pigs.
11. Personal quarantine is at present the only solution of the hog cholera and swine plague problems.
12. The laws of the state regarding infectious swine diseases should be observed if good results are expected. Farmers and swine breeders should co-operate in the matter. The successful solution of this problem lies in their hands. The Board of Live Stock Commissioners is anxious to do all in its power, but without active assistance from the persons most interested its efforts must be futile.
13. Disinfection is one of the fundamental principles of sanitation. As ordinarily practiced it is worse than useless. To accomplish its object it must be absolutely thorough and carried out with a correct understanding of the results aimed at.

[APPENDIX F.]

REQUEST FOR INSPECTION AND TUBERCULIN TEST OF HERD AT EXPENSE OF BOARD OF LIVE STOCK COMMISSIONERS.

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To the Board of Live Stock Commissioners of Ohio, Columbus, O.

Gentlemen:—I have reason to believe that some of my cattle are afflicted with tuberculosis and wish to have my entire herd inspected and tested with tuberculin and the diseased animals disposed of according to the rules and regulations of your Board.

I understand that this inspection and test are to be made at the expense of the state, and in consideration thereof I agree thereafter to observe the precautions and measures and to comply with the means recommended by your Board, to prevent the reintroduction and redevelopment of tuberculosis in my herd.

I certify that the cattle for which I request an inspection and test have been in my possession since ....

Yours respectfully,

(*Address*)...................................

................*County, Ohio.*

My herd contains the following animals: Cows....; heifers over one year old....; bulls over one year old....; steers....; calves under one year old....; total........ The milk from this herd is used by........ ...., for ....

The cattle are ....

(Breed.)

The following are my reasons for believing that some of my cattle are afflicted with tuberculosis:.................. ....

....

....

....

RULES AND REGULATIONS

OF THE BOARD OF LIVE STOCK COMMISSIONERS FOR INSPECTING AND TESTING CATTLE WITH TUBERCULIN, AND MEASURES RECOMMENDED TO PREVENT THE RE-INTRODUCTION AND RE-DEVELOPMENT OF TUBERCULOSIS.

(*a*) The owner of the cattle to be tested must agree to furnish all necessary assistance.

(*b*) All reacting (diseased) animals must be killed and burned or buried or sold to fertilizer works for fertilizer purposes. The hides may be removed and sold by the owner.

(*c*) After all diseased cattle have been removed the stable or stables must be disinfected according to the directions which follow, viz.:

Remove all manure, litter, fodder, etc., scrape floors and walls with a sharp hoe and thus remove every particle of dry manure, dirt, etc. (this cannot be done too thoroughly); remove all rotten and loose woodwork, boards, etc., from the sides and floors; sweep the mangers thoroughly and remove all accumulations of food and waste in and about them. Scrub the mangers and feed-boxes with hot water and soap or with a solution of lye. Then apply the disinfectant. One of the cheapest and best substances for this purpose is a one-tenth to one-fifth per cent. solution of bichloride of mercury—(a 5 per cent. solution of carbolic acid may be used instead, is very efficacious, but more expensive than bichloride of mercury)—made by dissolving one ounce of this substance in eight gallons of water for a one-tenth per cent. solution; two ounces for a one-fifth per cent. solution. Dissolve first in one gallon of hot water and then add the rest of the water. This solution is highly poisonous, as are all strong disinfectants, and should be kept out of the reach of children and animals. It corrodes metal and is, therefore, best prepared in wooden or earthen vessels. It is applied with a brush or sprinkling can, or better, a spray pump.

Every particle of exposed surface, every crack or crevice, nail hole, etc., of the walls, ceilings, mangers and feed-boxes must be soaked with this solution. Poor or careless disinfection is no disinfection at all. A saturated solution of sulphate of iron should then be used to soak the floors, gutters, drains, etc. After everything is dry the entire interior of the stable may be whitewashed. The mangers and feed-boxes must then be washed with hot water to remove the bichloride of mercury, which might otherwise poison the animals.

After this the stable should, if possible, remain perfectly empty for a few weeks, and during this time and ever after exposed to as much air and sunshine as possible; both of these are enemies of disease germs and conducive to good health in animals. All litter, rotten wood, etc., removed previous to disinfection should be burned, or removed to a safe place. Manure would best be spread in a thin layer on a large flat field and thus exposed to the disinfecting action of the sun's rays. If there is a dirt floor in the stable several inches of the top layer should be removed with the manure.

In introducing new animals into the herd the tuberculin test must always be required, and the original herd should be re-tested with tuberculin every year until no more traces of disease are found to exist.

[APPENDIX G.]

COLUMBUS, October, 1902.

REGULATIONS FOR THE TRANSPORTATION OF SHEEP AFFECTED WITH SCABIES.

To the Managers and Agents of Railroads and Transportation Companies of the State of Ohio, Stockmen and Others:

To protect the sheep industry of this state the Board of Live Stock Commissioners of Ohio hereby declares the following regulations affecting traffic in sheep:

> From and after October 15, 1902, no sheep affected with scabies, and no sheep which have been in contact with others so affected, shall be allowed to be moved, shipped or driven from any point within this state to any other point unless said sheep shall have previously been dipped twice, at intervals of ten days, in a mixture approved by this Board.

The dips now approved by the Bureau of Animal Industry of the United States Department of Agriculture, Washington, D. C., and which have been adopted by this Board, are:

> 1. THE TOBACCO AND SULPHUR DIP, made with sufficient extract of tobacco to give a mixture containing not less than five one-hundredths of one per cent. of nicotine and two per cent. flowers of sulphur.
>
> 2. THE LIME AND SULPHUR DIP, made with eight pounds of unslaked lime and twenty-four pounds of flowers of sulphur to one hundred gallons of water. The lime and sulphur should be boiled together for not less than two hours, and all the sediment allowed to subside before the liquid is placed in the dipping vat. When using either of these dips it is best to keep them at a temperature as near 110 degrees Fahrenheit as possible, stirring frequently. If the weather permits the sheep may be sheared before being dipped. Each animal must be kept in the dip two minutes, and the head as well as other parts of the body must be made thoroughly wet with the dip.

The penalty for violation of these regulations is from fifty dollars ($50) to five hundred dollars ($500), in addition to the penalty for violating any of the provisions of sections 4211-9 to 4212 inclusive, of the Revised Statutes of Ohio.

THE BOARD OF LIVE STOCK COMMISSIONERS.

PAUL FISCHER, *Veterinarian.* W. W. MILLER, *Secretary.*

NOTE—Additional copies of this circular can be had by applying to the Board of Live Stock Commissioners.

TUBERCULOSIS IN CATTLE.

The numerous inquiries concerning tuberculosis and the frequent requests for examinations and tuberculin tests of dairy herds that have been received by the State Board of Live Stock Commissioners, indicate that the farmers of Ohio take a live interest in the solution of the tuberculosis question.

A great deal has been said and written about the disease in the past few years, but many published statements are so far from being accurate representations of well known facts that a widespread confusion as to the importance of tuberculosis to cattle owners has arisen, and there seems to be a demand for accurate information on this much discussed subject.

What is tuberculosis? What are the symptoms of tuberculosis? Is tuberculosis a contagious disease? Does tuberculosis occur in man? Does tuberculosis occur in other farm animals than cattle? What is the cause of tuberculosis? Is tuberculosis curable? What shall be done with a herd in which the disease has made its appearance? What does the State Board of Live Stock Commissioners offer the farmers of Ohio in the form of aid in solving this problem? Does the State pay the owners of tuberculous cattle?

These are some of the questions most frequently asked, but none is so often heard as the last one, "Does the State pay the owners for tuberculous cattle?"

This clearly indicates that the financial end of the question is one that affects the farmers' interest. Whether the disease affects human beings, or in any way endangers their health, is secondary in the minds of some cattle owners. Important as this last question undoubtedly is, it is a matter that concerns, in a public way, the various boards of health. The State Board of Live Stock Commissioners is primarily interested in the economic phase of the question, in the health of the domestic animal. From this point of view the above questions with a few others, will be briefly considered in the following pages. Care has been taken to state nothing but clearly established and generally accepted facts.

Definition. Tuberculosis is an infectious and contagious disease that is caused by the tubercle bacillus. The disease may attack any or all organs of the body, but the lungs and the abdominal organs are the most frequent seats of the morbid changes.

Duration of the Disease. The course of tuberculosis is usually chronic, extending over months and years. In certain subjects the disease results in death in a short time, although this is the exception. Chronic and slowly developing cases may at any time become acute and end rapidly in death.

Occurence. Tuberculosis occurs in practically all warm-blooded animals, including man, and may be transmitted to man by the lower animals, and vice versa. No domestic animal is exempt from possible attack, although some species are much more susceptible than are others. Cattle suffer more by far from this disease than other animals. In swine it is more common than is generally supposed. The horse, dog, cat, sheep and goat are also occasional victims. The disease is often observed in the chicken, especially where opportunities for infection are offered by tuberculous (consumptive) attendants.

Prevalence. Tuberculosis occurs in all civilized countries. One-seventh of all deaths among human beings are ascribed to this cause. Among farm animals it is most common where cattle are extensively raised, and where they are kept under highly artificial conditions, which are at the same time unhygienic. Close housing, poor ventilation and improper drainage, unsuitable food and impure water, etc., favor the development and spread of tuberculosis. Increased traffic in cattle is also a factor to be considered in explaining the increased prevalence of the disease in late years which has given rise to the erroneous belief that tuberculosis is a new disease. The fact is that tuberculosis was known to exist many centuries ago.

A few brief statistics will give an idea of the importance that this disease has assumed in other countries. Carefully kept slaughter-house records show that the percentages of tubercular cattle in various countries are as follows:

Amsterdam, Holland	13 per cent. of all cattle. (Over 3½ per cent. of all swine.)
Prussia	15 per cent. of all cattle.
Saxony	30 per cent. of all cattle. (Over 3 per cent. of all swine.)
Certain departments of France	25 per cent. of all cattle.

In England, James Wilson, Lecturer on Agriculture in Aberdeen University, states that the British farmer and stock owner lose annually about fifteen million dollars from tuberculosis in cattle. A herd of eighty pure bred Short Horns, intended for export from England to the United States, contained thirty-four tubercular animals, 42 per cent.

In the United States carefully compiled statistics are not available, but the disease is mostly found in the crowded districts near the large cities of the Eastern States. In isolated cases the prevalence of the disease is observed, although the figures obtained are not nearly as high as are those of European countries. The same may be said of

Ohio, where the disease is known to exist as well as in any other civilized country, but there are good reasons for believing that it is less frequently met with here than in some of the Eastern states, and that some regions are comparatively free from it.

The Cause of Tuberculosis. The direct or exciting cause of tuberculosis is the tubercle bacillus. Nothing else can produce tuberculosis, and on the other hand, the tubercle bacillus can produce no other disease. Poor food and care, in themselves, can never produce tuberculosis; they can, however, so affect the body of an animal that its tissues become a more favorable soil for the development of the tubercle bacillus and thus increase the animal's susceptibility to the disease. Unscientific breeding of any kind acts in a similar manner. The disease itself, except in the rarest cases, is not inherited by the offspring.

Predisposition and Susceptibility. On account of certain weaknesses or defects of constitution, either inherited or acquired in later life, certain animals seem to be more liable to contract tuberculosis than others. Such animals are said to be predisposed to the disease, or to have a special predisposition or susceptibility. The two terms are of similar meaning.

The Tubercle Bacillus. The tubercle bacillus is a minute vegetable parasite that is visible only with the aid of a very powerful microscope. It exists, as far as definitely known, only in the bodies of animals that have tuberculosis, or in the excretions or products of such animals. The original source of the tubercle bacillus is not known any more than we know where the first cow came from.

Meat and Milk from Tuberculous Animals. The meat and milk from tuberculous animals may, and frequently do, contain the disease-producing organisms in large numbers. The use of products from tuberculous animals as food for other animals or for human beings may be the cause of the development of the disease.

How Does an Animal Contract Tuberculosis? Tuberculosis can be contracted in one way only, and that is by the entrance of the tubercle bacillus into the body of a susceptible animal and its consequent growth and development in the tissues of the body.

How Does the Tubercle Bacillus Get Into the Body? The tubercle bacillus may gain an entrance into the body in any one of three or four ways. First: It may be inhaled into the lungs in the form of dust. The dust of a room occupied by a tuberculous person, or that of a stable containing affected animals always contains these germs which are discharged from the body with the sputum by persons, and with the expectoration and other excretions in the case of animals. Infection in this manner causes pulmonary tuberculosis (pulmonary consumption of human beings). Second: The food may be contaminated with the excretions of tuberculous subjects. Where cattle are stabled the saliva from an affected animal may contaminate the food of its neighbor and in this way the disease is commonly spread. This explains the fact that when a number of cattle are affected in the same stable they are usually found grouped together and near the animal that introduced the disease into the herd. The feces of animals may be the carriers of the germ. This is of special importance where hogs "follow" cattle. The use of meat, milk, or any other product of a tuberculous animal, as food, may be the cause of tuberculosis. Thus calves are infected by suckling dams that have tuberculous udders. Third: The bacilli may enter wounds and then be carried to all parts of the body by the blood. Fourth: The act of copulation may be the means of transmitting the disease, when either the male or female generative organs are affected. The sources and opportunities of infection are thus seen to be varied and numerous.

The Appearance of the Organs of Tuberculous Animals after Death. The changes found in the body of an animal affected with tuberculosis vary with the age of the disease and with the organs affected. The commonest changes consist of nodules or "tubercles," which are most frequently found on and in the lungs, on the lining of the chest cavity, on the abdominal organs and on the lining of the abdominal wall. These tubercles vary in size from minute bodies as large as millet seeds to enormous tumors. They may occur singly or in large clusters. The larger ones, upon being cut open, usually discharge a yellowish cheesy, or pus-like mass. The tubercles on the surface of the lungs are pinkish in color and have an irregular, wart-like surface. The lymph glands in any part of the body may be converted into masses of the cheesy nodules described above.

The Symptoms of Tuberculosis. The symptoms of tuberculosis depend entirely upon the location and the extent of the disease, and are frequently very difficult to recognize. Thus we may find the symptoms of a chronic lung affection, characterized by cough, discharge from the nostrils, difficulty or other peculiarities of breathing, running down in condition, etc. Affections of the abdominal organs may cause diarrhoea, constipation, bloating and other symptoms of indigestion. Affections of the brain cause cerebral disturbances, such as impairment of sight, peculiarities of behavior, dullness or even great excitability. When the udder is affected this organ may present various modifications, hard lumps, abscesses, changes in the quantity and quality of the milk, etc., or nothing abnormal may be noticed. Some animals may seem to be in perfect health and yet the disease may be quite advanced and may assume the acute form at any time. Such animals constitute dangerous sources of infection. But even when they are present, none of the symptoms above given are strictly characteristic of tuberculosis, since all of them may be absent, and any or all of them may occur in the course of some other disease. Then

How Shall We Recognize Tuberculosis? The history of the herd is of especial importance in this connection. If the herd or some animal in the herd has not been thrifty for some time in spite of the best food and care, if there have been occasional deaths from unknown causes, if some animals cough occasionally, or continually, and, finally, if the herd is composed of animals recently bought up from various doubtful sources, public stock yards for example, there is good ground for suspicion that tuberculosis may exist. Abortion and barrenness are also common manifestations of the disease, but they may also result from other causes. In order to get definite and reliable information on the matter we must resort to

The Tuberculin Test. This consists in the careful measurement of the animal's temperature, followed by the injection of a certain quantity of tuberculin into the loose tissue under the skin. Within from eight to sixteen hours from the time of the injection of the tuberculin the temperature of the animal, if tuberculous, will become elevated in a characteristic way. If the animal is healthy no such elevation of temperature will take place. In making this test certain precautions, which cannot be given here, must be observed, and careful physical examinations must in some cases be made in order to avoid possible errors in diagnosis.

Is the Tuberculin Test Reliable? Although this test is not an infallible means of making a diagnosis for tuberculosis, it is the next thing to it. The results obtained from this test are more accurate than those obtained from any other known method of diagnosis for any other internal disease. By the use of tuberculin it has become possible to exterminate tuberculosis from a herd without sacrificing healthy animals.

Tuberculin. This is a liquid extract, so to speak, made from artificial cultures of the tubercle bacillus. Before it is ready for use it is subjected to the action of a temperature that is absolutely known to kill all tubercle bacilli, and then the dead bacilli are removed by a special process of filtration. Consequently

Tuberculin Cannot be Injurious to Healthy Cattle, and it causes no serious permanent disorder in diseased animals.

What Shall Be Done With Tuberculous Cattle? After the diseased animals have been recognized they should be immediately separated from the remaining healthy ones, to prevent the further spread of the disease. The quarters selected for the healthy animals, unless they have never been occupied by cattle before, should previously have been thoroughly disinfected, otherwise separation will amount to nothing. The affected animals can be disposed of in different ways, depending on conditions peculiar to each individual case. Badly affected animals must be killed and their carcasses destroyed by burning or deep burial. The carcasses of animals with certain forms of the disease (local forms), if not advanced may *under certain conditions* be utilized for beef. Healthy calves can be raised from slightly affected dams, but this is a procedure that is attended with many difficulties and drawbacks, and is usually not desirable unless the dam, for some reason, is an exceptionally valuable animal.

The Cure for Tuberculosis. Although cases of apparent recovery are sometimes met with, a real cure for this disease in cattle has not yet been found. The only remedy that has proven satisfactory is the immediate or gradual destruction of all affected animals and the careful isolation of the healthy ones. Improvement in our methods of feeding and general care, housing, etc., plays the most important part in the solution of this question.

Is it Desirable that Herds be Kept Free from this Disease? The control of tuberculosis in cattle is desirable for two reasons. In the first place it is a question of economy, a question of profit and loss in the dairy and in the beef feeding business. Secondly, it is a matter of hygienic importance in as far as it concerns the health of human beings that use meat and milk or other dairy products for food. But leaving the most important phase of the question entirely aside, that of the health of human beings, what are some of the economic reasons for controlling the spread of tuberculosis among cattle? There are several ways in which the disease may cause losses.

1. By direct loss of the animal through death.
2. By reducing the market value of an animal through loss of flesh.
3. By reducing the quantity and quality of the products of the dairy or beef animal and consequently the profits.
4. By the danger of infecting other animals, cattle and swine.
5. By reducing the breeding value of an animal—abortion, sterility, etc.
6. By injuring the reputation of a herd.

What is the State Board of Live Stock Commissioners Doing to Aid the Farmers in Solving the Tuberculosis Problem? The State Board of Live Stock Commissioners will test, free of charge to the owners, any dairy herds in the state of Ohio that are suspected of containing tuberculous animals, and give advice as to the best manner of getting rid of the disease. The conditions under which these tests will be made are as follows:

1. The owner of the herd to be tested must make a written application, on a form furnished for the purpose, to the State Board of Live Stock Commissioners, and in this application state his reasons, which must be acceptable to the Board, for believing that some of his cattle are tuberculous, and express his willingness to comply with the rules of this Board for regulating the spread of tuberculosis.

2. All reacting (tuberculous) animals that are in an advanced stage of the disease, or that show symptoms of udder affection, must be destroyed at once. All other reacting animals (i. e., those in apparent health) must be at once isolated from the remainder of the herd, which has been found free from all symptoms of the disease, and kept

stdictly isolated until disposed of either by slaughter and complete destruction of the carcasses by burning or burial, or by slaughter in abattoirs that are under the control of the Federal Meat Inspection Laws. Such cattle must be disposed of within one year from date of test.

This enables the owner to receive the market value of those animals that are fit for food, but he must bear the complete loss of those only that are dangerous for food purposes and consequently worthless any way.

At the present time the State has provided this Board with no funds whatever to compensate the owners for the loss of cattle in an advanced stage of the disease. Nevertheless, by disposing of diseased cattle according to this plan nothing but a decided advantage can result.

1. *Cattle belonging to the first class (those in an advanced stage of the disease and those with udder affection) are worse than worthless, being highly dangerous to the health of other animals, to say nothing of the health of attendants, and cannot possibly be a source of profit to the owner. Milk from such animals is also a dangerous article of food.*

2. *Animals belonging to the second class (those in apparent health) are a source of danger to the still healthy animals, are not making the profit for the owner that they should make, and are growing less in value every day. The milk from this class of animals may also be dangerous.*

3. Milk from animals not in an advanced stage of the disease, and that are free from all symptoms of udder tuberculosis may be sold, or it may be used for feeding to other animals, but only after having been boiled, or after having been Pasteurized by heating it not less than twenty (20) minutes at 140 deg. F. (60 deg. C.). This destroys all tubercle bacilli, hence removes all danger of infection and the Pasteurization does not in any way injure the milk or cream (consistency or creaming properties).

4. After the tuberculous cattle have been removed, the stable in which the remaining healthy cattle are to be kept must be cleaned and disinfected according to the rules of the State Board of Live Stock Commissioners. The necessary changes to insure better sanitary conditions must also be made.

These changes consist principally in providing thorough drainage and in the admittance of a plentiful amount of light and air by providing windows and ventilators where they are needed.

5. Calves dropped by tuberculous animals *during the year which they are permitted to be retained* must immediately be removed from their dams and raised on milk from healthy cows or on boiled or Pasteurized milk from reacting animals.

6. All newly introduced stock must be tested with tuberculin and found free from tuberculosis before it may be allowed to mingle with the healthy herd.

(This must be done at the owner's expense.)

7. Within six months or one year after the first test a second test will be made at the expense of the State (providing this is deemed necessary at the time of making the first test) in order to detect any affected animals that may have failed to react at the first examination. After the herd has been declared free from tuberculosis the owner must agree to do all he can to keep his herd healthy by keeping the surroundings in a sanitary condition and by permitting none but healthy (tested) animals to be introduced into his herd.

The State Board of Live Stock Commissioners.

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